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ORIGINAL ARTICLES

AMBROSE PARÉ, THE FATHER OF FRENCH SURGERY. 1509–1590.

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Great good sense, wonderful industry, remarkable opportunities, and an untiring and unconquerable ambition, have combined to render the name of Ambrose Paré celebrated in the annals of surgery. Born of humble parents, amid unfavorable surroundings, under circumstances which would have crushed a spirit less ambitious, Ambrose Paré, by his unaided efforts, made himself master of the surgical science of his day, commanded the confidence of emperors and peasants, of statesmen and soldiers, and left posterity the record of a life well spent. He marks the dividing line between the servile surgery of the ancients and the original, independent and progressive art of the moderns. Just as Vesalius, Eustachius and Fallopius dared to contradict the errors of thirteen hundred years, and correct the anatomic mistakes of Galen, so Paré brought about a new order of things in surgery. Firm in his convictions, honest in his statements, and accurate in his observations, this great man was far in advance of his age. The story of his life reads like a romance.

FIG. 1.—Initial from Paré's book, A. D., 1564.

Paré was born at Laval, a small town in the province of Mayenne, in France, in the year 1509. His life was spent during a period of great and stirring scenes —a time remarkable in the history of the world. At the time of his birth the art of printing had been invented less than sixty years; the existence of a new continent had been proclaimed by Columbus seventeen years; Martin Luther was delivering Biblical lectures in the University of Wittenberg, and preparing to shake the foundations of the theological world; Ariosto, of Italy, was writing immortal verse; Erasmus, residing in the same sunny clime, was delighting the world with his matchless scholarship and educating the young son of James IV. of Scotland; and Copernicus, while studying the revolutions of the heavenly bodies, had not dared to proclaim his views. Louis XII., of France, was engaged in war with Italy. Henry VIII. had just succeeded to the English throne. Maximilian I. ruled the land from the Danube to the Zuyder Zee.

The same year that Paré first saw the light of day, there was ushered into the world, one Michael Servetus, destined to discover the lesser circulation and die by slow torturing fires; and John Calvin, the theological bigot of Geneva. Paracelsus, that compound of science, eccentricity and charlatanism, was in his sixteenth year. Realdus Columbus, celebrated as an anatomist, was 15 years of age.

The early education of Paré was obtained from a priest. While yet in his teens he was apprenticed to a barber-surgeon who instructed him in minor surgery. While thus engaged, Laurent Colot, the celebrated lithotomist, chanced to visit the town for the purpose of operating for stone. Paré was present, and was so struck with admiration at the result of the operation that he resolved to devote himself to the higher branches of surgery, an art which was then almost exclusively in the hands of the barbers. With this object he set off for Paris where Jacques Goupil, one of the professors in the College of France, acted as his preceptor. Here the masters explained to him the works of Lanfranc, Albucasis, Guido de Chauliac, and John de Vigo, the only surgical textbooks of the times. Soon Paré became interne to that famous hospital, the Hotel Dieu, where he remained for three years. During this time Paré was engaged in teaching anatomy. In 1536, in his twenty-seventh year, he received the appointment of military surgeon and was directed to accompany

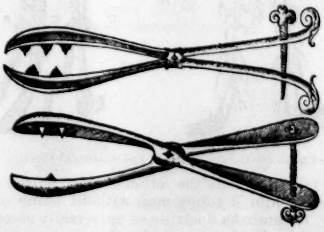

FIG. 2.—Stone crushers used by Paré.

René de Montjean to Italy. After the surrender of Turin, and the death of Montjean, Paré returned to Paris and began the practice of surgery.

The three years spent in campaigning were of great value to Paré and during this time he made some important observations. In the treatment of gun-shot wounds, the teachings of John de Vigo, physician to Pope Julius II. had been followed implicitly. Such injuries were regarded as poisoned wounds and the practice was to cauterize them with boiling oil, or the hot iron, while alexipharmics were administered internally. John de Vigo assures us that the danger of these wounds results from the round form of the balls, their degree of heat, and the poisonous qualities that the powder communicates to them. This theory, so destructive in its effect, received universal credence until Paré arose to combat it. After the battle of Pas-de-Suze, the supply of boiling oil having given out, it was observed on the following morning by Paré that those wounds looked best which had not been dressed with hot oil; and he also noticed that such patients showed less

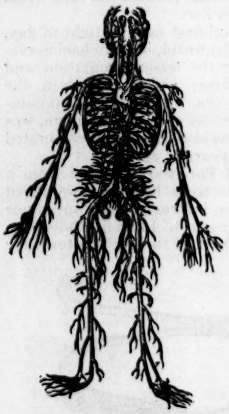

FIG. 3.—Figura arteriarum. (Paré.)

FIG. 4.—Dental Forceps. (Paré.)

febrile reaction than the others. It required great courage for him, a young man without name or authority, to combat a doctrine so universally accepted; but Ambrose Paré was not the man to be overawed by weight of authority when his own sober judgment taught him differently.

In Paris, Paré was interviewed by Sylvius de la Böe. Malgaigne says: "This interview was honorable in all respects to both." Sylvius, whose teachings attracted more auditors than those of Fernel, even invited the young surgeon to dinner, and heard with great attention, the observations and experiments on which Paré had established his doctrines on gun-shot wounds, and was so much struck with them that he besought him with great warmth, to write them out and make them public. Paré felt sensibly this encouragement, coming from so high a source, and prepared his text, drew the figures, and in the year 1545, at Virant Gaulterot's, sworn bookseller in the University of Paris, that little work which marked in a manner so glorious the revival of French surgery, was published, with the following title: "The Manner of Treating Wounds made by Arquebuses and other Fire Arms, and those made by Arrows, Darts, and the like; and also of Burns, made especially by Gunpowder: Composed by Ambrose Paré, Master Barber-Surgeon, Paris."

In a few months a second edition was issued. In both editions the use of the actual cautery was advised to check hemorrhage. Paré, however, was thinking, day by day, of a plan by which hemorrhage could be controlled without the frightful torture of the hot iron. He resolved to test his theory and finally, at the seige of Dampvillier, in the year 1552, an amputation was made upon the person of M. de Rohan, and, for the first time in the history of surgical science, Ambrose Paré ligated the bleeding vessels. Fortunately the patient recovered and, full of joy at having escaped the red-hot iron, said that he had parted with his leg on very good terms.

The young surgeon had made two great discoveries: By the first he saved from cauterization all who had simple gun-shot wounds; by the second all who suffered an amputation were spared the tortures of the actual cautery. And, in the language of Malgaigne, "Military surgery, which till that time had been a torture, became a blessed art, and it was a barber-surgeon who produced the double marvel."

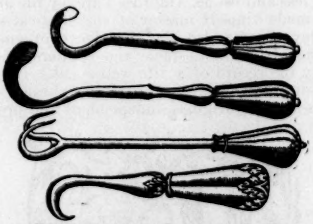

FIG. 5.—Obstetrical instruments. (Paré.)

The practice of ligating an artery was entirely new, but the idea was old. Galen, Celsus, Avicenna and Albucasis had all spoken of the tying of arteries and veins, but there is no evidence to show that they practiced it. For centuries the actual cautery had been the principal means of checking traumatic hemorrhage. Sometimes, by way of variety, hot oil or boiling pitch were applied to the bleeding surface. The discovery of Paré revolutionized the practice of surgery and brought on his devoted head a torrent of abuse. Like Harvey at a later date, Paré suffered in his practice for a time. Of all his enemies, Gourmelen, President of the College of France, was the most clamorous. At the present day he is remembered only for his opposition to the great surgeon. "It was then," said Gourmelen, "very forward, rash and presumptuous in a certain individual, to venture upon condemning the cauterization of bleeding vessels after cutting off a mortified limb, a method so highly and continually commended and approved by all the ancients, teaching in opposition to that, without any authority, without good sense, some new method of his own, of tying arteries and veins." He called Paré a bloodthirsty cruel rascal, while Paré, stung to the quick, sometimes lost his temper but generally conducted his defense with admirable coolness, as the following will show:

"You boast, M. Gourmelen, that you will teach me

my lessons in surgery, and my operations; but in that, I believe, you are a little mistaken, for my education has been quite after another fashion. I have learned my art, not in my closet; no, nor by hearing the discourses of physicians, though that also I have not despised; but in the Hotel Dieu, where I lived for three years, seeing many diseases, and practicing many operations upon the living body, and learning also much anatomy from the dissection of the dead. But," he continued, "I have yet more to boast of, for, being in the service of the King of France, I have, in my time, served four successive Kings, having followed them in battles, skirmishes, and assaults;

FIG. 6.—"De situ infantis in utero." (Paré.)

sometimes I have been in sieges, and sometimes shut up with the besieged, curing their wounds." . . . . . "And last of all, I have lived in this great renowned city of Paris many long years, where, thank God, I have been held in some repute, and ranked at least equal to my peers, insomuch that there have been few difficult or celebrated cures in which my head and hand have not been employed. How, seeing these things, dare such a man as you, who has made surgery no part of your study, talk of teaching me?"

Paré, although proud of his discovery, arrogated nothing to himself, but with true piety ascribed it all to God. He says: "I think it was taught me

FIG. 7.—Reduction of a dislocation of the humerus. (Paré.)

by the special favor of the sacred Deitie; for I learnt it not of my masters, nor of any other, neither have I at any time found it used by any. Only I have read it in Galen, that there was no speedier remedy for staunching of blood than to bind the vessels through which it flowed towards their roots, to-wit, the liver and the heart."—(Johnson's translation, London, 1634.)

Nor was the use of the ligature the only discovery made by Paré. He was the first to employ the twisted suture in the operation for hare-lip; to extract cartilaginous bodies from the knee joint; and to perform podalic version in difficult labor. He was a man of great mechanical genius, as is evidenced by the large number of new instruments and appliances found in his book. He gave the first account of what is now incorrectly described as Hey's saw, and the club-foot boot, claimed to have been devised by Mr. Syme, of Edinburgh. Among the many wood cuts of curios, one sees artificial eyes, ears, noses, teeth, arms, legs and hands.

Surgeon successively to Henry II., Francis II., Charles IX., and Henry III., it was said of Paré that "the Kings of France transmitted him to their suc-

FIG. 8.—Artificial limbs. (Paré.)

cessors as a legacy of the crown." These monarchs were all warmly attached to Paré; he was at once their privy-councilor and trusted surgeon, and his influence over them was by no means small. Let it be said in his honor that this influence was never exerted in an unjust cause. So great was the power of this good man over Charles IX., that he was enabled to put a stop to the massacre of St. Bartholomew, (Aug. 24, 1572), when 70,000 Huguenots were murdered in Paris and various parts of France. The

FIG. 9.—Artificial arm. (Paré.)

details of that horrible event are well known. For years, Huguenots and Catholics had been at enmity; and affairs had at last reached such a crisis that the bloodthirsty mother of Charles deemed it necessary to kill all the Huguenots. For three days and nights these unfortunates were hunted like the beasts of the field. Helpless infants, old men and women were slain by hired assassins. The streets of Paris were blocked by the bodies of the dead. How long the slaughter would have continued is impossible to say, had not one man, and he a Huguenot, done his duty. That man was Ambrose Paré. "It was not long," says the Duke of Sully, who has so graphically described the scene, "before Charles felt the most violent remorse for the barbarous action to which they had forced him to give the sanction of his name and authority. From the evening of the 24th of

August, he was observed to groan involuntarily at the recitation of a thousand acts of cruelty, which every one boasted of in his presence. Of all those who were about the person of this prince, none possessed so great a share of his confidence as Ambrose Paré, his surgeon. This man, although a Huguenot, lived with him in so great a degree of familiarity that, on the day of the massacre, Charles telling him the time was now come for him to turn a Catholic, he replied, without being alarmed: 'By the light of God, sire, you can not have forgotten your promise, never to command me to do four things, namely, to enter into my mother's womb, to be present in the day of battle, to quit your service, or to go to mass." The king soon after took him aside, and disclosed to him freely the trouble of his soul. 'Ambrose,' said he, 'I know not what has happened these two or three days past, but I feel my mind and body as much at enmity with each other as if I were seized with a fever; sleeping or waking, the murdered Huguenots seem ever present to my eyes, with ghastly faces, and sweltering in blood. I wish the innocent and helpless at least had been spared.'" The order which was published the following day, forbidding the continuance of the massacre, was the consequence of this conversation. At the time, Paré was 62 years of age, and of all his good deeds this was the greatest.

Nor was the influence of Paré over the populace less potent. Among the soldiers his presence was sufficient to inspire new courage. At the siege of Metz, when Charles V. had surrounded the town with an immense army, and the garrison, comprising the flower of French nobility, were reduced by hunger and sickness to the utmost extremity, Paré was introduced into the city by stealth, much to the joy of the besieged, who exclaimed: "We have no longer any fear of dying, even if we should be wounded; Paré, our friend, is among us." At this period Paré had already passed sixteen years as an army surgeon and was known to all the officers and many of the rank and file. In his "Chirurgia," our subject tells how the Duke de Guise commanded that he "should be weel used, and bid mee I should not faile to be the next day upon the Breache, where I should meete with all the Princes and divers Captaines, which I did; who receaved mee with great joy, and did me the honor to imbrace me, and tell me I was very welcome, adding withall that they did not feare to dye if they should chance to bee hurt." (Johnson's translation). The next day after his arrival, Paré successfully trephined M. de Bugend, who had been struck on the head by a piece of stone, and had remained insensible for fourteen days.

Paré became a member of the College of Surgeons in 1554, submitted to the examinations and received successively the degrees of Bachelor, Licentiate, and Master in Surgery. Although ignorant of Latin, Paré was received regardless of a statute which required that the candidate should know that language. He never wore the professor's cap and gown. He was tall in stature, with slender figure and a grave and dignified countenance. All his portraits represent him in his court dress, with the frilled collar characteristic of the age. No one can examine that grand old folio, "Opera Chirurgia," of Paré, without being overwhelmed with the thought that this work was penned by the intellect of a giant. Here we have nearly one thousand closely printed pages, over 300 illustrations—many of which contain numerous figures—which cost the author an almost fabulous sum. We find complete treatises on many subjects; on human anatomy; beasts, birds and fishes; monsters and prodigies; fractures and dislocations; tumors and wounds; artificial arms, legs and hands; amputations and ulcers; cauteries and ligatures; trephines and dental forceps, etc., etc.

So long as surgeons practice their beneficent art, the name of Ambrose Paré will be mentioned with reverence.

2600 Gamble Street.

CONCUSSION OF THE BRAIN.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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During the last forty years the subject of concussion or commotion, as the Germans and derivative Latin writers term it, has been a matter of careful study, observation and experimental research. It is caused by some external violence which communicates vibration, oscillation or minute movement to the anatomic elements of the parts acted upon. In the causation all observers agree; but what occurs in the constituent elements of the parts affected can not be said to be as yet satisfactorily settled. All the parts of the body may be the subject of such action: Bones, muscles, nerves, viscera; and some assert that the blood itself may be the subject of concussion. The study of the effects of concussion has been devoted chiefly to the brain; yet it seems certain that the same cause would be followed by like effects, no difference what part of the body might be the site; and hence that one common definition might be given of concussion, founded on physical and physiologic laws. In a classic article on this subject by Verneuil, the able French surgeon and writer, after revealing to the reader the difficulties which perplex him in his task, he offers us the following definition of concussion: It is a series of phenomena, occurring more or less suddenly, which result from a mechanical shaking or jarring movement of the anatomic elements, tissues and organs, characterized by temporary excitation or depression of the properties, offices or uses of the parts which are shaken; and as a result there are caused anatomic changes similar to those which are normally seen in the successive phases of functional excitation or functional repose. This definition is the embodiment of what its author has derived from his own observations and that of others, and especially from results which others have obtained in experiment on animals.

In the milder grades of concussion in the animal, the question has been whether there is any appreciable lesion to be discovered in the part subjected to experiment. The most admit that such lesion can not be discovered, and since in man, in case of concussion of the brain, the subject soon recovers, hence there is no opportunity of searching for the evidence of such lesion; for as Verneuil says, we derive our elements of the diagnosis of any disease from three sources, to-wit: The causation, the symptoms arising, and the direct inspection of the parts affected. But in the case of cerebral concussion one or more of these sources of information is often wanting.

The inspection of the injured part is wholly denied to the surgeon; the extent of the violence done can only be vaguely and imperfectly estimated; and not infrequently it is wholly unknown; as where the patient is found unconscious or unable to explain how he was injured; and finally the remaining source of knowledge, viz., the symptoms, are often far from being clear and well defined.

Concussion as will presently be more fully detailed, may be said to present itself in three grades which we will designate the mild, severe and fatal; the second of which offers symptoms sufficiently durable to admit of deliberate consideration, and presents as a marked condition a depression of the cardio-pulmonary functions, in which pulse and breathing are slow and feeble; temperature is lowered as a result of these changes and the functions of the sensory and motor nerves are temporarily abolished. The patient neither moves nor feels; the mental faculty is, for a time, reduced to nullity; the patient is not conscious of existence; and in all this the animal, for a time, has lost his distinguishing characteristics, and lies at the verge of plant life.

Many explanations of these conditions have been offered, as will be seen by a brief review of the literature which, during the last forty years, has been written on the matter.

In 1842 Haworth wrote on concussion of the brain, and claimed that the violence impinging on one side of the skull carried the brain against the opposite wall, and thence rebounding a vacuum remained, in which blood and gas collected, as it were, by *contre-coup*. Haworth thinks that a vacuum is also formed in the brain in those who ascend great heights, and thus he would explain the cerebral trouble more or less present in such cases. This explanation of the phenomena arising from concussion could only be applicable in those cases which have arisen from great violence, in which the patient dies at once from the violence to the brain; the organ being lessened in its volume, and into the empty spaces thence arising, blood escapes from lacerated vessels. The filling of the space with blood is a secondary effect of the injury.

In 1852 there were reports on concussion of the brain by Fano, Chassaignac and Haas; the former two find that where death has immediately followed the blow on the head, then there will be found an effusion of blood around the pons-varolii; but if death occurs later, then in the cerebral structure there will be found disseminated small clots of blood, which these writers attribute to cerebral contusion. They deny that concussion can injure without leaving some signs of violence; one always can find ecchymosis or marks of cerebral injury. Haas thinks that there can be concussion with or without ecchymosis; in which there is sopor, and unconsciousness; if it be simple concussion then these conditions may soon disappear; but if blood be effused then these symptoms may continue and even increase in intensity.

Continuing his studies, in 1853 Fano discredits the notion that in concussion there is perceptible material change in the cerebral structure, but he claims that there will be effusion of blood near the base of the brain. Fano, Chassaignac and Sanson have found in the brain small points of effused blood, not larger than millet seeds. In milder cases, Eisenmann thinks there is a shock which acts reflexly through the vasomotor filaments on the capillaries, and produces a stasis of blood in the latter; and in more severe cases the stasis may be carried to the extent of rupturing the vessels. The order of the phenomena is as follows: The shock is first propagated from the vibrating bones to the nerves, and thence a recurrent reflex action on and through the nerves, next stasis, and sometimes rupture of the vessels, and occasional structural softening.

Paget, writing on cerebral concussion in 1863, made three stages of it: In the first stage an unconsciousness occurs, and this may vanish and the patient recover; in the third stage the violence is greater, and the condition may be sthenic, or asthenic in character. The sthenic symptoms occur early, viz., within a day or two; the asthenic symptoms occur after a longer period, viz., after ten or eleven days. Between the first and the third, or inflammatory stage, Paget places a second one in which there is almost a total absence of morbid signs. After surgical operations, for example an amputation, Paget finds that similar conditions may arise, viz., an asthenic stage, or that of depression, or a sthenic stage, or one of reaction may appear. As here, different plans of treatment are demanded in the opposite conditions, so in concussion of the brain, the stage of depression demands stimulants, while that of reaction requires sedatives and depressants.

Paget estimates the chances of recovery to be very slight after severe concussion of the brain; in such cases not more than one in twenty get well.

Alquié, in Paris, made some experiments in 1865 on concussion and determined from them, that through the injury caused, the functions of the brain were more or less interfered with; and further, he decides that concussion and contusion do not differ much from each other in their respective actions. The lesion produced by slight concussion is so slight that it eludes the closest search with the eye. Its mechanism is not that of vibration, but of a blow that came and went at once. The causal violence carries the brain forward in one direction, viz., that of the causal violence. Alquié concludes that concussion and contusion are convertible terms. Local and diffused concussion can not be distinguished from each other in their action. The phenomena resulting from severe concussion, are vertigo, fainting, weakness, drowsiness and coma. The cerebral trouble caused may appear in remissions and exacerbations. From concussion, one or many functions of the head, or the parts dependent on it, may be impaired or annulled, and this disturbance may be brief or lasting. Concussion in its action resembles grave mental disease.

In his treatment, Alquié is in accord with Paget. Collapse and depression demand stimulants; active reaction demands an opposite course.

Beck, of Freiburg, in 1865, referred the effects of cerebral concussion to violence transmitted to the medulla oblongata, and to lesion of the centers which preside over the functions of the heart and lungs. He finds as common causal agency, a blow with a blunt instrument.

Witkowski, in 1877, made some experiments on animals, in which the head was struck with a hammer, and the pressure of the blood in the carotid arteries was noted in the meantime. The immediate effect was increased blood pressure in these vessels; the increase commenced immediately after the injury,

and reached its highest degree in from twenty to fifty seconds, and continued for from one to two minutes. This increased pressure followed both slight and more severe concussion. It was afterward succeeded by a slight descent of pressure below the normal standard. The pulse, as a rule, was not changed.

In the cases in which the skull has been trephined, so that the brain could be seen after removing sections of the dura mater, it was found that the strokes caused a perceptible contraction of the vessels of the dura mater; this continued for a minute or two, and then a slight reaction followed. Witkowski decided that these alterations in the blood pressure were not due to the oscillations from concussion, but were the consequence of direct action on the nerve matter. Though he offers this explanation, it is probable that few readers can recognize or comprehend it.

Duret, of Paris, in 1877, made experiments on animals, in which he studied the effects of concussion on the brain. The violence done to heads of animals was produced by blows on the skull, and also by violently injecting fluid into the cranial cavity, through a trephined opening. He finds the leading results of concussion to be slowness of the pulse and respiration; and, finding an absence of all lesions in the cerebral hemisphere, he sought for injury in the medulla oblongata. In the experiment in which water was violently injected into the skull, the fluid in the lateral ventricles was caused to pass downward through the middle ventricle, and the canal of Sylvius, from the third to the fourth ventricle. In its passage through the canal, the fluid caused lacerations of the walls of the narrow passage. In another experiment the skull was trephined above, and the posterior ligament connecting the axis and the atlas was exposed. Now when pressure was made through the trephined opening above, then an impulse could be perceived below, from the descent of the fluid into the spinal canal.

Duret's experiments were done chiefly by the injection of water into the cranial cavity. This fluid was forcibly thrown against the surface of the brain beneath the dura mater. It is evident that the action of such violence differs from that caused by a blow. It is not so instantaneous, the violence progressing from a slight grade to the higher one; and only when the fluid reaches a certain amount could it displace the intra-ventricular fluid. Such action must differ from that in which the violence impinges on the outside of the skull and thus travels upward to the less resistant cerebral matter; hence the results of Duret's experiments may be deemed an approximation to, rather than an actual reproduction of, the action of concussion from direct violence.

In 1878 Duret continued his researches on this subject, and divides the shock of concussion into three classes, viz., central, bulbar and medullary, according as one of these structures is most involved. In the case of a blow the passage of the fluid downward acts most severely on the bulb.

Duret divides the action of concussion into two periods: In the first period there is a spasmodic and a paralytic stage, in which there is coma with depression. In the second period there is a congestion and inflammation. The site of the blow has an influence on the morbid phenomena; for when the forehead receives the blow, the pons and bulb are the most affected, but when the side of the head is the site of the violence, then the other hemisphere is the more affected.

After the review of the subject of concussion, if the facts which have been drawn from so many quarters be condensed, and conclusions be drawn from them, the following may be offered as an epitomized summary of the changes which are induced, temporarily or continuously, in the brain, from concussion. In the mildest grade there is a brief diminution of the blood pressure in the part; its tension is temporarily lowered. As the result of this there is mental disturbance. The cells in the cortex of the brain, on whose normal condition the evolution of thought in some unknown way depends, are deprived for a few moments of their accustomed supply of nutrient material; the result is a brief perversion of intellect; memory is lost; the power to recognize surrounding objects is weakened or lost. As a personal illustration of this, from a fall from a carriage the writer once suffered temporary concussion of the brain; though he arose at once to his feet on a street with which he was very familiar, yet for a moment all appeared to him as if he was in a strange city. That picture registered in the memory, yet remains as an enduring scene of mental imagery; and though there was knowledge of what had occurred, and thought enough to search the head for fracture, yet the subject of the injury possessed no accurate knowledge of his surroundings. The writer would attribute the conditions to the temporary disturbance of the circulation in the surface of the brain.

If the violence be somewhat greater than that here supposed, then to the disturbance of blood pressure there is superadded a disturbance of the cellular constituents composing the surface of the brain. A jostling or displacement of the molecular elements of these cells, even though it be microscopically minute, must suffice to induce functional derangement. In such condition the patient lies unconscious to all that is around him; he breathes naturally; the pulse is commonly somewhat weakened and irregular; the temperature is not increased, and sometimes is less than normal; the pupil is neither dilated nor contracted, and reacts somewhat to light. The patient may remain for hours, a day, or even a week in this condition in which he is neither awake nor asleep; he is so nearly asleep that his condition is often mistaken for sleep; but it differs from sleep in this: That the eye-balls do not occupy the position they have in healthy sleep; they are often in motion beneath the closed eye-lids. There is an absence of snoring in the breathing. In fact, the patient breathes as one who is partly asleep, rather than as one who is really so. For the lack of a name we will designate it the sleep of concussion.

In the grades of concussion just mentioned, its action is chiefly manifested in obtunding or temporarily depressing the functions of the mind; but if the intensity of the causal violence be still greater, then besides the abolition of the thinking faculty, the cardio-pulmonary functions are disturbed, depending doubtless on the lesion of the centers at the base of the brain, which preside over these functions; the lesions which were represented by the lacerations in that region observed by Duret. The pulse is soft and often irregularly hastened; the breathing is similarly affected; regular, alternating with irregular breathing; slowness with accelera-

tions; and these disturbances of the action of the heart and lungs, conjoined to unconsciousness may remain for days or weeks, and then consciousness may reappear suddenly, the patient arising, as from a sleep, with a gradual disappearance of other abnormal conditions. Such an injury of the head as here described often results from a fall from a carriage or a horse, also to the boy from an accident in climbing. In such accident the weight of the body multiplied by the velocity acquired at the final moment of striking the ground, represents a high degree of violence, especially where the surface fallen on is a hard one. In such cases, when severe, there is a contusion of a limited surface of the brain; and thence results a localized or isolated palsy of some part of the body. Or, as the writer has observed, there may be a partial hemiplegia in the arm or leg; and not infrequently one limb is more affected than the other; and at the same time there may be restlessness of the limbs on the non-paralyzed side.

In the still higher grade of concussion, the functions of life are permanently suspended, either at once or death ensues in a few minutes after the receipt of the violence. Such fatal result gives the opportunity of necropsy, in which the condition of the brain could be inspected; yet singularly enough there is far from agreement among observers in respect to these conditions; some asserting that the brain did not fill the skull; others have found to the contrary. Of the first condition there is a notable instance on record; an observation made and reported by Littré over a century ago. This case, cited by nearly all writers on concussion, was that of a criminal who, to escape punishment, ran and struck his head so violently against the wall of his prison that he fell dead. The desperate energy displayed in the fatal act has had no small share in retaining the account in history.

In the necropsy of the case reported by Littré, the cerebral matter was found broken down, and to lack much of filling the cranial cavity; that is, a vacuum was found in the upper part of the skull. There have been reported a few other cases, in which there was found a slight open space above the brain in those who had died from cerebral concussion. There has been reported an effacement of the natural irregularities of the cortex of the brain. Other observers contend, however, that both the empty space as well as the alleged leveling of the surface is not present in tbe unopened cranium, but is caused by the escape of blood from vessels which are divided in the opening of the cranial cavity. Notwithstanding these discordant utterances, the predominant weight of observation is on the side of those who assert that there is some lessening of volume, as well as an effacement of the cortical irregularities of the brain. Besides these evidences of violence, the cerebral matter, on being cut, presents minute ecchymoses of blood, due to ruptured minute vessels, and it is probable that such rupture, in less extent, occurs in concussion of a mild degree.

DIAGNOSIS.

The diagnosis of cerebral concussion is an easy matter in cases in which there is history of violence acting on the head. Yet in the absence of such history the problem of diagnosis becomes sometimes difficult, since it must be wholly solved by the symptoms present; then the pulse, the breathing, the pupil and the color of the face give valuable information; stertor and contracted pupil point to poison with opium. The fumes of spirits in the breath point to alcoholic excess. An instance of this kind came within the knowledge of the writer: A man who was found prostrate by the side of the street was the object of puzzling study to some physicians, when the coachman of one of the doctors solved the matter by saying that he would give half a dollar to be as sick as the man was.

There are cases in which the work of diagnosis is much embarrassed by the lesion not being a simple one of concussion; since there may be joined to it contusion and compression; especially compression, which would greatly modify or change the usual symptoms of a case of concussion; in fact, concussion and compression present in a case would mutually interact, and influence the symptoms of each other; and in such case the surgeon would find it extremely difficult, perhaps impossible, to determine all the conditions present; in such embarrassment the most prominent symptom should claim attention and treatment.

PROGNOSIS.

From what has preceded, it is clear that the prognosis of concussion of the brain must depend on the grade of the injury. In the grades of slight severity a recovery may be certainly anticipated at an early period; but in the severer forms the prospect is more unfavorable. The patient may remain in an unconscious and half dead state for weeks, and afterward slowly recover, or from his half dead condition he may lapse into actual death. Also it is to be observed that after severe concussion, though the patient may live, yet not infrequently there remains some vestige or memento of the injury in the form of perverted motion, sensation or impaired mentality. From the observations of Griesinger and other alienists it has been seen that the mental character often undergoes some change in those who have been the subject of severe cerebral concussion. The memory may be weakened or altered in some way; the recollection of proper names, of specific nouns and adjectives may be partly or wholly lost; from the framework of languarge may be plucked the most of its exuberant appendages, and the whole be reduced to a meager skeleton of generic headings and categories. Besides this, the character of the individual may be slightly or greatly modified; the hitherto well-controlled temper may become vehement and rash; he has outbursts of anger, and may become the actor of lawless deeds. He becomes distrustful of those around him. These changes may be plainly manifest, or they may be so slight as only to be perceptible to the subject's intimate friends; and whatever character these changes assume they will probably remain permanent, inasmuch as they depend on structural change which will continue unchanged. In modern times, when crime seeks for its defense that its subject can not control his actions, and consequently that he is not responsible for his offenses, the matter of concussion has assumed a special importance in forensic medicine. As the concussion of the spinal column from railway accident seeks, for real or assumed injury, reparation from the pockets of the corporation, so the transgressor of law often claims immunity on the ground that at some time previously he has been injured in his head, and as concussion

leaves no tangible or visible mark, hence it conveniently serves the purpose of such subterfuge.

TREATMENT OF CONCUSSION OF THE BRAIN.

Since there are two totally different states in which the patient of concussion may be, viz., depression or excitation, so the treatment must be shapen as one or the other condition exists or predominates. As a rule, the first effect of concussion is to induce depression and exhaustion of the vital forces; and this condition must be met and counteracted by stimulants and excitants. The patient is often so prostrated that the reflex action of swallowing can be only imperfectly performed; a condition, in fact, which renders it extremely difficult to administer remedies by the mouth. If, while the muscles of deglutition are in a partly palsied state, liquid medicine be given by the mouth, the most of it will probably pass into the trachea and add to the patient's perilous condition by partially asphyxiating him. In fact, the same precaution is required here as must be exercised in administering medicines to a person moribund or near death. The wine or other thing then given, as the writer has witnessed, can strangle and immediately end life. Hence, when the patient is greatly prostrated by depression and can not readily swallow, fumes of ammonia should be applied to the nose; also tickling of the nostrils will often rouse the patient. Stimulants, as brandy and warm water and black coffee, may be injected into the rectum. Hot applications should be placed over the præcordia, and the surface of the body should be well rubbed, so as to promote the movement of the blood. In case of extreme prostration, syncope may be avoided, or rather life awakened by lowering the head so that the heart may be aided by gravitation, in carrying the blood to the brain. After the patient has been sufficiently resuscitated to swallow, then remedies may be given by the mouth. The administration of stimulants must be limited to the period of depression; afterward the treatment must look to controlling the inflammatory symptoms which usually present themselves after a few days. The stage of excitation is ushered in about the eighth, ninth or tenth day after the receipt of the injury. Should the patient be plethoric, then bleeding from the arm should be done; not less than a pint of blood should be drawn. The signal advantages of such depletion have been verified by the writer in several instances! If the subject be very robust, as much as thirty ounces can be safely withdrawn; thus inflammatory action, through the absence of material for its maintenance, is subdued and retained within tolerable limits. Depletion might be done by means of leeches; yet withdrawal of blood from an open vein is more effectual. A valuable adjuvant in this antiphlogistic treatment is ice, which should be applied to the patient's head as soon as he emerges from the primary stage of depression. The ice, well crushed, should be applied to the head in an India rubber bag, and this should not be heavy, lest it cause sloughing in the subjacent scalp. The head should be maintained in an elevated position, so as to favor the ascent of the blood through the veins, toward the heart. All constriction of the neck should be avoided. As a faithful ally in this work of derivation of the blood from the head, is warmth applied to the lower extremities; for this, hot water, contained in bottles or a rubber sack may be used. As there is danger of freezing the scalp, so there is of burning the feet, unless the warmth be carefully used.

As to internal treatment, there should be given a purge; for this, none is better than calomel and jalop, 10 grains each. Besides this, to restrain or prevent the development of inflammation there should be administered iodid of potassium in doses of 10 grains, repeated every four hours for the adult. If the patient be a child of 4 or 5 years of age, the dose should amount to 3 grains, repeated three to four times daily; and should there be the usual restless somnolence, this must be controlled by bromid of potassium, of which an amount equal to that of the iodid of potassium should be given. By the use of this internal medication, the writer has frequently seen the subjects of severe concussion pass safely through the inflammatory stage; the temperature retained in low limits.

There should be mentioned a mode of treatment formerly much used in cases of cerebral concussion; this was vesication of the scalp. To do this, first let the hair be shaven off, and then the whole covered with emplastrum cantharidis. This does not act entirely as an ordinary blister; little serum is drawn out, but instead there will form a coating of fibro-albuminoid material over the scalp, tenacious and adherent. This vesication was a favorite of Dupuytren, and it is claimed that good results followed its use. Yet when one considers the slight anatomic connection between the scalp and the encephalon, it is difficult to conceive how this external blister can act on the parts within the cranium.

Frequently two or three months are required for entire recovery of the patient, so that he can resume some occupation; and for a yet longer period, limited exercise of the body and mind should be enjoined.

SHALL FRACTURE AT THE LOWER END OF THE HUMERUS BE TREATED IN THE FLEXED OR EXTENDED POSITION.

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As only ten minutes are allotted to this paper the author can not enter into any defense of the principles herein advocated. For a fuller discussion, the reader is referred to the annals of the Anatomical and Surgical Society, Brooklyn, Vol. II, No. 8, 1880. Reprints of the article therein contained will be cheerfully sent to any one interested in the subject, by addressing the author, 1604 Spruce Street. For alleged malpractice, with verdict for the defendant, see paper by DR. C. E. KURTZ, Trans. College of Physicians of Philadelphia, Pa.

The advantages claimed for the rectangular position are:

1. That it is convenient. the patient can be up and about, enjoying his freedom.

2. That if ankylosis supervenes, the rectangular position furnishes the most useful stiff elbow.

In regard to the first point, viz., "that it is convenient," I have simply to say that the argument has far more consideration from the profession than it is entitled to. The vital question is, In what position can a fracture be treated that will yield the best and most perfect results? It was a wise remark of the late Dr. Levis that there was no good reason why a person should not as properly go to bed for a fractured clavicle as for a fractured femur. In the treatment of fractures of the extremities the recumbent posture is in the highest degree favorable to the

earliest attainable decline of inflammatory processes.

The chief, and as some say unanswerable argument, in defense of the flexed position is, that it is the most favorable if ankylosis takes place; this is true but it is also true that only a small percentage of fractures at the lower end of the humerus result in stiff joints, and of these the injuries are from direct crushes, in which the fragments are comminuted, or the injury compound. In my experience the majority of elbow fractures in childhood are due to indirect violence, as falls, and in this class no ankylosis is likely to follow.

Whatever advantages may be claimed for the rectangular treatment, these should be carefully weighed with the disadvantages, if such there be. One thing is certain that deformity and loss of full function is apt to attend injuries at the elbow. Is the deformity due to the mode of treatment?

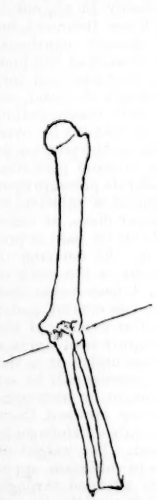

FIG. 1.—Note the length of the internal condyle, and contrast the axis of the shaft to the humerus with the axis of the articular surface.

FIG. 2.—Note the support obtained by resting the elbow against the side of the pelvis, especially serviceable in weight carrying.

Neither the upper nor lower extremity is straight. In the humerus and femur the inner condyle extends below the level of the outer condyle, hence the long axis of the humerus does not agree with the long axis of the ulna, nor the long axis of the femur with the long axis of the tibia. In the normal extended arm, the limb during supination appears most crooked.

This is best seen in the emaciated. This is nature's own mechanism and the laborer turns it to advantage. When carrying a heavy weight, as a pail of water, he brings the middle of his extended arm against the pelvis, and this throws the weight at a distance from his feet, and does not impede locomotion.

In the treatment of fractures at the lower end of the humerus, by arbitrary manufactured splints, the tendency is to change the plane of the articular surface. As a single illustration of this I will take a fracture of the internal condyle. In this fracture the condyle is detached from the humerus, but remains attached to the ulna through the lateral ligament, while the outer condyle remains a firm part of the humerus. In the application of an anterior rectangular splint, the bandage that binds the arm to the splint has a tendency to displace upward the broken internal condyle. This is not observed during the treatment while the arm is bent, but when the cure is effected and the arm extended, a typical gun-stock fracture is noticed.

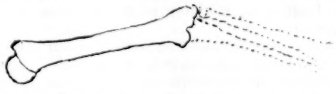

FIG. 3.—Pathological specimen from Gurlt. Internal condyle displaced upward.

FIG. 4.—Gun-stock deformity seen in horizontal elevation of the limb.

This deformity is of comparatively trifling disadvantage for the lighter offices of the joint, but it is a very great loss when the carrying function of the limb is taken into consideration.

FIG. 5.—Note the loss of support due to the altered articular axis of the lower end of the humerus. Elbow can not rest against the pelvis.

ADVANTAGES OF THE EXTENDED TREATMENT.

1. It permits of the best flow of circulation and is the position best suited to combat excessive inflammation.

2. It permits of inspection of the whole limb, and permits of comparison with its unbroken fellow.

3. It is a position in which the dressing can be applied with ease and simplicity.

4. In this position if either condyle is unbroken we have a natural splint, by means of which the natural articular surface can be preserved.

5. It is the position in which we dress fractures of the condyles of the femur, in which we get perfect joints with full range of motion.

TREATMENT IN THE EXTENDED POSITION.

In the treatment of fractures at the lower end of the humerus, no manufactured splints are ever required. Dr. Powers, of New York, has had excellent results in treating fractures of the elbow at right angles, but he never uses manufactured splints. He invariably uses plastic material, which he molds to the limbs.

If I have a skilled assistant, I usually hold the limb extended and ask him to apply the dressing. Otherwise I place the limb in the care of attendants and apply the dressing myself. A first dressing should always make provision for swelling. Hence I either apply cotton or an elastic substance above and below the point of fracture, or lap about it pieces of flannel saturated in lead water and laudanum. The patient is then placed in bed and the limb made to rest comfortably upon a pillow. The renewal of the dressings for the first week must be left to circumstances. If dressed dry and the pain rapidly subsides, I often do not disturb the first dressing for a week.

As soon as the swelling subsides sufficiently, I apply a soft bandage directly to the limb. I prefer thin flannel, butter-cloth or the thinnest, coarse-woven cheapest muslin. In applying the bandage I make no reverses, except at the top and bottom when I wish to change the direction of the bandage. I only use the spiral and let the bandage take its own course. By degrees as the bandage runs up and down the limb, the whole is covered in. This mode of applying the bandage is immeasurably superior to the spiral-reverse, which latter creases the skin and slips. When the limb is properly dressed with the spiral, the bandage alone makes an excellent splint. On completing the bandage, a glutenous paste may be rubbed into the outer layer, or adhesive plaster may be made to cover in the bandage. Such a dressing will permit of easy motion without displacement.

Usually after the swelling subsides, the patient will be able to rise and walk about, but the arm must be left hanging and not bent and put in a sling, If the hanging arm is painful, the patient should again assume the recumbent or the semi-recumbent position.

As to passive motion I have only time to add that if begun too early or with too much spirit, the result will be to protract the cure. Only gentle passive motion in the latter half of the treatment will be conducive to early functional return. The complete range of motion is often delayed for months after the cure is effected.

FRACTURE OF THE LOWER END OF THE RADIUS.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY P. S. CONNER, M.D.
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As ordinarily met with, fracture of the lower end of the radius, is the result of "cross-breaking strain" consequent upon over-extension of the hand upon the forearm. Force received upon the palm, carried up through the os magnum and the projecting line of junction of the scaphoid and semi-lunar, if sufficient to break the radius must do so in a more or less longitudinal direction, not transversely. Over-bending of the forearm bones may, and at times does, cause fracture of the radius, which is approximately transverse; but the level of the break is always higher than that of the common "wrist fractures."

Experimentally, by over-extension, every variety of the fracture under consideration can be produced; from the simple crack through the articulating extremity to a separation and displacement of the carpal fragment equal to that of the most severe injury coming under professional care. Whatever its degree, displacement is due to the secondary action of the anterior radio-carpal ligament upon the fragment already dragged off from the radius; and it is in the majority of cases largely maintained by the binding force of an untorn dorsal strip of periosteum, as originally shown by Pilcher. Much has been written, and more said, respecting impaction of the dorsal compact edge of the lower end of the upper fragment in the cancellous upper surface of the lower fragment; and proof of its existence has been found in inability to properly adjust the fragments by traction upon the hand in the direction of the long axis of the forearm. But, unless it may be under very unusual conditions, a force sufficient to pin the upper fragment in the lower would be sufficient to, and would split the lower fragment into two or more pieces and consequently prevent impaction. The resistance to replacement by direct extension is, in the great majority of cases, probably in all, not in any fixation of the upper in the lower fragment, but in the untorn periosteal band already mentioned. Only when such band is absent because of complete laceration at the time of injury, or it has been torn by the dragging force exerted through the hand, can proper apposition be secured by such manipulation. But, if instead of pulling upon the hand it be over-extended, brought, in other words, in the position in which the fracture occurred, any existing periosteal band is at once relaxed; and moderate pressure upon the upper end of the lower fragment is sufficient to carry this fragment into its proper place, at times with a very audible snap. Little or no pain is produced, no anesthetic is required; the securing of proper apposition of the fragments is the work of but a few seconds. Personally, I have never had any difficulty in thus adjusting a case coming under care within twenty-four hours after receipt of the injury. If there is, as there certainly is at times, a fixation of the ulnar styloid process under, or in the posterior annular ligament, such process will be set free either by simple over-extension, or by such combined with rotation. Once properly apposed, there is practically nothing other than outside violence to produce a secondary displacement. The weight of the dropped hand strongly tends to maintain apposition, and additional security is afforded through the action of the tendons crossing over the line of break on the palmar and dorsal surface. The supinator longus through its styloid attachment, does without doubt act upon the lower fragment, but such action is too feeble to cause displacement.

Proper adjustment (and the earlier it is effected the better) will prevent or greatly limit effusions, exudations and adhesions. The unfortunate result, at times observed, which has been attributed generally to age, to rheumatic or gouty habit, to too short or too long employment of splints, to improper conduct on the part of the patient, or carelessness on the part of the doctor, is commonly, very possibly always, due to imperfect adjustment at the time of the original dressing; the displaced lower end of the upper fragment making such pressure upon the soft parts upon the palmar surface near the wrist as to interfere with both arterial and venous circulation, especially the latter, and that not only directly but indirectly through the induced nervous disturbance. Under such circumstances the ordinary treatment by splint

and bandage only makes a bad matter worse, the vessels and nerves being compressed between bone and board. That which is absolutely essential to thoroughly satisfactory repair, is early and complete adjustment. This is one of the few fractures in which the chief difficulty lies in securing not maintaining apposition. Once secured, only the simplest after-treatment is really required; a band around the wrist perhaps, to lessen the after-spreading due to separation of and later somewhat misplaced attachment of the inter-articular cartilage.

In view of possible after-ligation, as professional opinion is now, it is wiser as a rule to employ some form of splint, plaster-of-paris or other, never extending below the wrist line and thus supporting the hand, which should be allowed to hang free. But the use of such splint is not necessary so far as the break is concerned, provided (and this proviso must be kept constantly in mind) complete apposition of the fragments is secured.

Its manner of production well understood, the difficulties in the way of primary adjustment duly recognized, and the first dressing properly made, this fracture becomes one of the simplest to treat, causes little inconvenience, comparatively, to the subject of it, and is very satisfactory in its end-result.

FRACTURES OF THE NECK OF THE FEMUR AND THEIR TREATMENT.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY BEDFORD BROWN, M.D.

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My personal experience in fractures of the neck of the femur comprises fourteen cases. Of these about 10 per cent. died in less than twelve months from complications, as inflammation and suppuration at the seat of injury, and fever. Two per cent. were bed-ridden for the balance of life. The remainder recovered sufficiently to walk with the aid of a cane or crutch for the balance of life. All the bed-ridden cases were of the extracapsular variety while the cases that recovered the power of locomotion were of the intracapsular non-impacted variety.

All of these cases of fracture of the neck of the femur occurred in females varying in age from 60 to 85 years old. These fourteen subjects presented every variety of conformation of figure. In two there was great obesity. In some the figure was tall and spare, while in others it was quite petite, and very delicate and slight. In one the figure was that of a very robust woman a little over 60. In one, a woman of 85, the weight did not exceed eighty pounds and the person was very emaciated.

Causes of fracture of the cervix femoris.—The causes of this fracture may be classified as the direct or major and the indirect and minor.

The major form of cause is always from direct violence, as a sudden fall from a distance on the hip, or a violent blow or great pressure from mechanical causes on the same point. On the contrary, the minor causes are always of the indirect variety from unusual sudden pressure on the foot while walking, a slight misstep, a sudden twist of the foot while walking.

A knowledge of the major and minor, or direct and indirect character of the existing causes will aid us materially in differentiating the variety and location of the fracture. The major or direct causes almost invariably cause the extracapsular variety of fracture with or without impaction, while the minor or indirect cause produces intracapsular fracture.

Symptoms.—In all cases of suspected fracture of the neck of the femur, the entire person, from the anterior superior spinous process of the ilium to the toes, with the exception of the external genital organs which can be protected from view by a napkin, should be exposed to inspection. After the clothing has been removed above the pelvis we are at once enabled to see the relationship of the two opposite trochanters to each other, their corresponding appearance, their relative prominence. We can also observe the relative positions of the two limbs throughout their entire length, and also we can better detect the slightest eversion of the foot in the least departure in its direction, and at the same time detect the least degree of shortening of the limb. Much of the information gained by this investigation is in these cases derived from comparative observation. The trochanter should first be examined. In the fractured bone, except in cases of impaction and non-displacement of the fractured ends, the trochanter is depressed and flattened compared with the sound side, and when moved from side to side the arc of the motion is considerably reduced. Extending our investigation downward, we observe the lower or tibial end of the patella does not correspond with that on the sound side. It is from a quarter to an inch above the line of that of the sound limb. Continuing our observations to the foot we find a shortening of the limb to the extent of from a quarter to an inch and a quarter in length. At the same time we find the foot of the injured limb everted. When by our own aid we correct this eversion it invariably returns spontaneously, and when the patient is requested to correct it, she is unable to comply with the request. Here we have a typical picture of a simple fracture of the cervix femoris,—first the depressed flattened trochanter, the difference in the line of the corresponding patellæ, the shortening of the limb and eversion of the foot. When the entire person is exposed without any movements of the patient, or manipulation on our part, the eye can detect these peculiarities at a glance.

Then again, in non-impacted fracture, if an assistant grasps the foot of the injured limb and alternately extends and relaxes the limb while the attendant grasps the trochanter and presses it firmly towards the pelvis, distinct crepitus may be detected.

Methods of Differentiation between Intracapsular and Extracapsular Fractures.—In determining the important question whether a fracture is intra or extracapsular, is non-uniting or uniting, the peculiar character of the cause assumes diagnostic importance. It may be said with much degree of certainty that shortening of the limb to the extent of a half or one inch, eversion of the foot, moderate pain in the hip, no indications externally of contusion, some crepitus on extension, flattening of the trochanter occurring after a slight indirect injury, as a very sudden misstep, striking the foot against the floor or steps forcibly, or a sudden twist or wrench of the foot from any slight cause in the aged, denote intracapsular fracture with no possible tendency to unite. On the contrary, shortening of the limb to the extent of from one to two inches with eversion of the foot, great

pain in the hip, flattening of the trochanter, effusion in the surrounding tissues in front and rear of trochanter, crepitus on extension in the comparatively young, much contusion of soft parts, from a major form of cause as a violent fall, blow or pressure directly on the trochanter denote extracapsular fracture with tendency to union of ligament.

Then again a slight shortening of the limb and eversion of foot, with much pain on attempted motion, absence of crepitus, slight ability to raise the limb or stand upon the foot, great effusion in front and rear of trochanter, from a violent direct injury to the trochanter with contusion of soft parts, indicates impacted fracture.

Diagnosis of Impacted Fracture of the Cervix Femori.—The two cases of impacted fracture of the neck of the femur which came under my observation both resulted from indirect and violent causes. In one the patient was 70 years old, and had a violent fall directly on the trochanter of that side. The trochanter was found on comparison with the opposite side to be flattened and depressed, and very tender on pressure. There was considerable swelling back of the trochanters, and in front below Poupart's ligament there was great swelling and much pain and tenderness. There was entire loss of power over the limb and inability to stand on it.

Shortening of the limb was imperceptible and eversion was entirely absent. The injury occurred more than six years since, and the patient has never recovered the use of the limb and is still comparatively bed-ridden.

The second case occurred in a comparatively young person with identical symptoms as the former, and has never recovered a fair degree of locomotion in the limb since the injury.

Complications.—One of the most serious complications observed in my experience has been symptomatic fever following the injury. It is more apt to occur in the extra than the intracapsular variety, because the causes are of a more violent character, and the anatomic structures of the part are more extensively lacerated.

I never saw but one case of protracted fever following intracapsular fracture in an aged person recover, and that was in the case of a woman aged 85 years. She recovered and lived in comparative health and comfort to reach 90 years, and then died from hemiplegia.

A temperature ranging from 101 to 103 degrees, a quick pulse, pain and restlessness denote serious organic changes going on in the injured structures, that if permitted to progress will continue until extensive inflammation, effusion of exudates and suppuration intervene.

Treatment of Fractures of the Neck of the Femur.—There is no class of fractures that require the exercise of more judgment in their treatment or more accuracy in diagnosis than fractures of this kind.

In one variety of fracture, the extracapsular, in those below middle life we can adopt means with safety to bring about union. To adopt the same means in intracapsular fracture in the aged would insure certain death. Hence the importance of an accurate differential diagnosis.

Treatment of Intracapsular Fractures.—In my own experience a good rule to work by in treating intracapsular fractures of the cervix femoris in the aged, is to so manage the case from the beginning as not to expect union of the fractured bones, but on the contrary to so conduct the management of the case as will, if possible, insure a good, strong, false joint, by which after a time the patient can regain a fair degree of locomotion for the balance of life. To bring about this desirable object, the pelvis from the anterior superior spinous process is enveloped with a broad flannel roller four inches wide and fifteen feet long, applied down below the trochanters. This flannel bandage gives comfort by the support that it affords the fractured bones, and the prevention of too much motion, and gives opportunity to the soft parts involved to throw out adhesive exudations. This is the full extent of the apparatus to be applied. As for the balance of treatment, pillows long and short, small and large, are to be relied on for splints and supports. Comfort of position is to be the guiding rule in the management of this class of cases. The ingenuity of surgeon and nurse will be taxed to so arrange the pillow splints as to insure comfort, relieve pain and secure sleep. When these objects are accomplished all has been accomplished that judgment and experience can do until inflammatory action subsides, and the process of fibrinous exudation is completed, and then the false joint is ready for use. To attempt, on the contrary, to confine this class of patients in a stiff apparatus with the view of accomplishing that which no power can ever effect, a union of bone or ligament, is to condemn our patient not only to unnecessary suffering but to certain death.

In the treatment of extracapsular fracture from violent and direct causes in the comparatively young, we may calculate with a degree of certainty on ligamentous union, provided the method adopted will maintain perfect adaptation of the fragments and we can adopt such methods and apparatus as will insure this end, without fear of detriment to the patient as in the former case. After the pelvis has been firmly enveloped in the broad flannel roller, as in the former case, then Buck's extension apparatus is applied and the extension maintained until union takes place, which is usually about six weeks.

In impacted fracture my method of treatment has been to envelop and support the pelvis and fractured hip bones by means of the flannel bandage, which I consider better and more comfortable than a simple band, and for the purpose of supporting the limb and the prevention of motion, which might cause dislocation of the fractured bones. Two sand bags, the longer, external, reaching from above the pelvis below the foot; the other, shorter, reaching from a little below the external genitals on the inside of the limb below the foot. These arrangements appear to meet the desired ends better in my own experience than any other.

THE TREATMENT OF FRACTURES OF THE SHAFT OF THE FEMUR.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY LEWELLYN ELIOT, A.M., M.D.

SURGEON TO EASTERN DISPENSARY; CONSULTANT TO ST. ANNE'S INFANT ASYLUM, ETC., WASHINGTON, D. C.

Our chairman having paid the high compliment of assigning the subject of the "Treatment of Fractures of the Shaft of the Femur" to me, I shall, within the time allotted, place my views before the Section in the briefest possible manner.

The causes, the symptoms and the diagnoses of fracture of the femur being entirely foreign to my subject, no mention will be made of them. We shall likewise exclude from consideration all fractures of the femur not located between the lesser trochanter and the condyles. Although every variety of fracture is found in this bone, the transverse and the oblique are the most frequent; these fractures may be either simple, comminuted or compound.

Having made our diagnosis, we must have the patient's bed arranged so as to allow permanent and continuous traction to be employed. This traction, in the case of adults, may be effected, after the proper adjustment of the fractured ends of the bone, through the employment of the apparatus of either Liston, Desault, MacIntyre, Thomas, the Smith anterior, the Hodgen suspension, Buck, Boyer, Neill or the double inclined plane of Esmarch, Gross, or others, the foot of the bed being raised so as to insure counter extension. In infants, either Hamilton's apparatus or vertical extension will give satisfactory results. To enter into a description of the various devices employed in the treatment of fractures of the femur would be of no interest to you, since all are familiar with them. The employment of permanent dressings, plaster-of-paris, silicate of soda or others of a like nature, I do not think justifiable before the third week, when union is sufficiently strong to warrant their application, although many surgeons employ them from the start, and I would hesitate quite a while before I would use any of them previous to the establishment of union of the fragments. Objections will readily present themselves. Should a compound fracture present itself, I should be still slower in applying a permanent dressing.

The question of suturing or pegging fragments in cases of compound fracture, and of amputation, may be settled in a few words. Where the fragments can be properly and accurately adjusted and the blood supply to the limb remains good, the fragments should be sutured or pegged and the wound treated by the open method; where, however, the soft parts are lacerated and the vessels supplying the limb are divided, amputation should be resorted to early, before the patient's strength is wasted through secondary hemorrhage, gangrene or other causes.

The treatment of fractures of the shaft of the femur resolves itself into the following: A suitable bed, accurate apposition of the fragments, the proper application of the splint and extension, good nutritious food, and unless the case is one requiring amputation, the results will generally be satisfactory, although shortening occurs in very many cases.

There is one question in relation to extension in fractures of the femur to which I would like to call attention. This is the matter of the priority of the application of adhesive plaster in extension. The generally accepted opinion is that Dr. J. K. Swift is entitled to the credit of first using it and Prof. S. D. Gross, in his "The Anatomy, Physiology and Diseases of the Bones and Joints," page 50, published in 1830, puts forth his claim as follows: "In complicated fractures of the leg, it not unfrequently happens that the soft parts about the ankle are so much contused or otherwise injured as to render it impossible to employ the usual extending bands. When this is found to be the case, the difficulty may usually be remedied by applying along each side of the leg, as high up as the seat of fracture will admit, a piece of strong muslin, about two feet and a half in length, two inches and a half in width, and spread at one of its ends with adhesive plaster. The part which is applied on the limb should be confined by three or four circular strips, so as to keep it firmly in its place, and equalize the extending power. The free extremities of the extending bands should then be tied under the sole of the foot and be secured to the block or bar which connects the lower ends of the splints. This mode of making extension, for which we are indebted to the ingenuity of my friend and preceptor, Dr. Swift, of Washington, will, I am fully persuaded, be found highly useful in practice and satisfactorily obviate the inconvenience to which I have just alluded."

Now, for more than twenty years, I have endeavored to adduce evidence so as to accord the credit to Dr. Alexander McWilliams, of Washington, and to that end have searched books and journals and papers. At the time when success seemed to crown this research I find published evidence which dissipates all contention.

The following appears in "Medical and Chirurgical Observations," as an appendix to a former publication, by Benjamin Gooch, Surgeon, London, published about 1771: "To answer the same purpose I have confined one end of a strong strip of sticking plaster of a suitable length and breadth under a circular piece of the same, about the middle of the side of the foot, carrying it over the heel, up the leg and confining the other end above the calf with another circular plaster. First gradually bring down the muscle gastrocnemius as far as they will readily yield, giving the limb at the same time the position described in my treatise on wounds. On the like occasion I have also fixed one strap by the circular piece about the foot and another by that above the calf of the leg, passing the one through a slit in the other, and using them as the uniting bandages; but then two more circulars are requisite to confine the other ends of the longitudinal strips securely."

That the studies and this publication of Gooch did not receive attention from surgeons and other writers is evident from the fact of so many others afterwards working in the same line of thought, each unconscious of the work of the other. Among those workers was Dr. Alexander McWilliams, who treated in 1827, a case of fracture of the femur by this method of extension, at the Washington Almshouse. Failing to establish the claim of Dr. McWilliams to priority in the application of the idea of extension by means of strips of adhesive plaster, I will present such evidence as I possess, all derived from letters in my possession, to establish his claim to the credit of being the first surgeon in the United States to put into practice this idea. At that time (1827) according to the letter of Dr. Hall, the recognized surgeons of this country knew nothing of this method, and indeed as late as 1836, M. Larray mentions the method only to condemn it, as will be seen in the extract taken from the Minutes of the Société Royale de Medicine of June 21, 1836.

In a letter under date of Jan. 9, 1875, Dr. Noble Young, of this city, writes: "In regard to the matter of the invention and application of adhesive strips for the purpose of extension in cases of fracture of the femur, by the late Dr. Alexander McWilliams, I have to state it is within the recollection of

his family that it occurred prior to 1829; they know this by circumstances impressing it indelibly upon the memory. He sent a model explaining the application to Paris by Dr. Hall, brother of the late David A. Hall, and received a letter from the French Academy of Medicine, congratulating him and thanking him for his valuable contribution. This letter has been mislaid only within the last few years. I may add that Dr. Jos. Barrows remembers its application at the almshouse in this city before 1828, when he was a student there."

Dr. James C. Hall, under date of Feb. 15, 1878, writes: "My evidence as to the application of adhesive strips as a means of extension in the treatment of fractures by Dr. McWilliams must be circumstantial. I came to Washington in October, 1828. After graduating (1827) I was for one year a resident physician and surgeon in the Philadelphia Almshouse, now Blockley Hospital. The visiting surgeons and clinical lecturers were Profs. Gibson, Horner, Rhea, Barton and Harlan. Very many and all kinds of fractures were treated in the House, and I am positive that I never heard McWilliams' mode either mentioned or practiced during my term of service. . . . My recollection is almost positive that my first knowledge of Dr. McWilliams' use of the strips as a means of extension was derived from an article which the Doctor published in a newspaper here, I thought it was the *National Intelligencer*, but Dr. Toner has searched for it and not found it there. This has not weakened my conviction that Dr. McWilliams published in some paper an account of his method of treating fractures of the femur. . . ."

Dr. Joseph Barrows, under date of June 6, 1878, writes: "Excuse my apparent neglect in not answering until now your letter in reference to the use of adhesive plaster in fractures of the lower extremities. In the year 1827, I was one of the resident students in the Washington Asylum or Almshouse, of which Dr. Alexander McWilliams was the attending physician. Dr. McWilliams at that time exhibited and used adhesive plaster for the purpose above indicated."

In the *Archives Généralés de Médicine*, Book ii, p. 247, 1836, I find: Sociétié Royale de Médicine, Paris, séance du 21 Janv: "Rapport de M. Larray sur un appareil à extension continue pour les fractures des extrémités inférieures; par le Docteur Williams de Washington.—Cet appareil est une copie àpeuprès entierè de l' appareil de Boyer. La seule différence consiste dans une attelle interne qui se fixe à la traverse sur laquelle la vis s'appuie. M. Larray blâme la methode en général et tous les appareils qui s'y rattachent. Il n'adopte pas d'avantage le double plan incliné, et prefère toujours sou appareil inamovible."

Dr. B. Troutman, of Philadelphia, Pa., at my request called upon Prof. Gross, asking him for some definite data of Dr. Swift's application of this method of extension and he writes under date of June 27, 1879: "I called on Dr. Gross several times, but he always happened to be out of town, but last week I called again and saw him. He told me that Dr. Swift employed adhesive plaster in complicated fractures first in 1829."

The record of the Almshouse shows in the morning report of July 18, 1827: "Admitted P. Boady, 40 years. Report of July 21, 1827: Fracture femur." This is evidently one of the cases to which Dr. Joseph Barrows refers in his letter.

In no work on surgery of this date—1827 to 1836—have I found any reference to this method of extension, so it is very evident that there had been no published development of the idea until Dr. McWilliams sent his model, a doll baby with the apparatus applied, to Paris. Dr. J. F. May was present at the presentation and verbally testified to the favorable reception accorded it.

To my satisfaction, I have established the following facts: 1, Dr. Gooch was the first to employ adhesive plaster as a means of extension in fractures; 2, the idea was allowed to pass into oblivion; 3, Dr. Alexander McWilliams, of Washington City, was entirely ignorant of the work of Dr. Gooch; 4, Dr. McWilliams developed and put in practice the idea in 1827; 5, the claim of Dr. Swift is too vague to carry weight with it; and 6, the published report of the Société Royale de Medicine is the first published account of the method after its revival by Dr. McWilliams.

TREATMENT OF OPEN OR COMPOUND FRACTURES.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY HENRY H. MUDD, M.D.

ST. LOUIS, MO.

An open wound communicating with a fractured bone is a serious complication. Every effort is directed to its closure by sound healing. Its importance and the difficulty of its management is determined largely by the amount of injury inflicted upon the soft tissues about the fracture, and by the extent of the comminution of the bone. This open wound is usually determined by the violence which inflicts the fracture, but may result from ulceration. An oblique fracture where the skin has been torn by the sharp angling of the bone, with or without impact against an external object, offers a good opportunity to convert a compound into a simple fracture.

Fractures by direct violence which is not crushing, even if the bone is comminuted, present often good opportunity for the immediate closure of the wound. The soft parts are not necessarily much injured by such a fracture. This is especially true where the bone is superficial.

Extensive lacerations and contusions of the soft parts with a small or a large wound of the skin preclude an effort at immediate closure of the skin wound. They demand drainage. Even in such conditions a compound fracture may occasionally be promptly converted into a simple one by the agglutination of structures contiguous to the fracture, though the skin opening may remain free for drainage.

Absolute cleanliness is the first requisite in an attempt to convert a compound into a simple fracture. A razor, soap and water, are essentials, and must be well used in order to cleanse the skin. The purity of the water used in washing the wound is of first importance. The removal of extraneous matter from the wound may be accomplished by a wash of hot water, but where grease, cloth, and dirt of various kinds are adherent to the raw surfaces, the fingers, forceps, etherial soap, turpentine, and sublimated washes may fail to accomplish perfect cleanliness,

though the wound may be rendered aseptic and heal readily. A fairly perfect adjustment of the fragments is a requisite of early healing. Maintenance of the adjustment by a well adapted splint which does not provoke engorgement and pain by undue pressure, is a most important item in the treatment. Many compound fractures where the local conditions would permit primary union of the wound, fail to progress favorably on account of the injudicious application of an apparatus, which is good in itself but is imperfectly applied.

The external wound may be hermetically sealed by suture and collodion, if it is small and the soft parts are not extensively bruised. Where the skin wound is extensive, that portion of it which overlies the fractured bone should be closed by suture, if a point favorably situated for drainage can be found somewhat removed from immediate contact with the bone.

If bone is protruding and has been contaminated by clothing, by a dirty skin, or by external objects, it must be thoroughly cleansed by careful picking and sponging, and then washed with an antiseptic solution, in order that aseptic conditions may be obtained. If the protruding fragment is not essential to solid union, the difficulty of cleansing its surface and the doubtful vitality of sharp long points of bone, which are denuded of periosteum and bruised by violence, justify its removal by bone nippers or saw. In the more extensive injuries, where direct violence has crushed the soft tissues, comminuted bone, and driven foreign matter into the wound, the cleansing of the parts and the removal of dead tissue will very often require an enlargement of the wound, or an incision to give free access to the injured parts. Fascia and muscle if irretrievably damaged must be cut away with the scissors. Loose fragments of bone are to be removed, and a complete knowledge of the extent of the injury to the bone and to contiguous parts, including joints must be obtained. Blood clots should be washed out, and after thorough cleanliness has been obtained, efficient drainage must be provided. The original skin wound may be closed and drainage be secured by special incision, or through an opening made for the inspection and cleansing of the wound. Every effort is to be made to avoid suppuration, as it will destroy still more tissue. It should be remembered that it is difficult to maintain a perfect asepsis about a wound which is slow in healing, hence even where the skin opening can not be closed, it is important to so arrange bone and soft tissues as to favor the agglutination of soft tissues about the line of fracture, in order that it may be shut off from the external wound at the earliest possible moment.

Fragments of bone, or the sharp ends of the fractured surface must not be permitted by malposition, to exercise undue pressure upon the soft parts. Angling at site of fracture must be corrected, and if the tendency to shortening is marked and not easily controlled, as it is not infrequently, where the ankle joint is involved in the fracture, the shortening of the limb by excision of the fractured end is proper and is a conservative measure. The adjustment of the compound and comminuted bone may not be perfect, but it must be practically so good that undue pressure on the soft parts will not produce ulceration, and must be such as to give a good outline and a useful extremity.

Extension and lateral support are the two chief agencies in maintaining apposition of fragments. Wiring of bone and the use of ivory pegs are occasionally necessary and can be used to advantage in isolated cases. They are, however, rarely necessary, and are an obstacle to rapid and solid union, except where they overcome the greater danger of persistent and obstinate displacement.

A solid union will often result without serious constitutional disturbance, even where the fracture remains an open one. The exposed bone will develop granulations, and if a part of it is necrosed, separation by granulation along the line of junction of the dead and living bone will occur, even while new bone is forming at other areas in the line of fracture.

Cleanliness, an easy and comfortable position for the fractured member, free drainage, and a good constitutional condition will generally insure solid union, though it may be long delayed. Union of bone in a compound fracture is much slower than in simple fractures, or than it is in the compound fractures which are promptly converted into simple ones.

Delayed union should be tolerantly dealt with; a persistent maintenance of the conditions which favor the nutrition of the injured leg will very generally be rewarded by a good recovery.

A thorough appreciation of the extent of the injury to the different structures of the extremity, must be obtained in cases where the judgment wavers between an effort to save the limb and an amputation. Amputation should be immediate,—that is it should be promptly enforced, as soon as the shock has passed, or postponed until the acute inflammation has subsided. A so-called secondary operation is safer than an immediate one.

The perfected technique of aseptic surgery enables us to save many extremities, where suppuration with its attendant damages must have supervened and destroyed the limb, before the details of antiseptic and aseptic methods were well understood. No less important is the selection of a splint which permits cleanliness, and at the same time insures the rest and the undisturbed position of the fracture, which is so essential to the rapid repair of the soft parts, and the union of the broken bone. The suspension splint of Dr. John T. Hodgen with its extension and free motion is a most important adjuvant in the treatment of compound fractures of the leg and thigh.

AFTERNOON SESSION, JUNE 6.

Dr. Graham, Chairman of the Nominating Committee, presented a verbal report, recommending for Chairman Dr, Joseph Ransohoff, of Ohio, and for Secretary, Dr. R. H. Sayre, of New York. The gentlemen nominated were elected by a unanimous vote.

DR. LEVI C. LANE, San Francisco, read a paper on "Concussion of the Brain."

A paper by Dr. OSCAR H. ALLIS, Philadelphia, on "Treatment of Fractures of the Lower End of the Humerus," was read by the Chairman, Dr. Roberts, its author being absent.

DR. P. S. CONNER'S paper on "Treatment of Fractures of the Lower End of the Radius" was read by title.

DR. BEDFORD BROWN'S paper on "Treatment of Fractures of the Neck of the Femur" was read by title; also the paper of DR. LLEWELLYN ELIOT, Washington, D. C., on "Treatment of Fractures of the Shaft of the Femur;" also the papers of DRS. H. H. MUDD, St. Louis, Mo., and JOHN B. HAMILTON, of Chicago.

DISCUSSION.

The discussion was opened by DR. R. H. SAYRE, who said—I would just like to put myself on record as differing in some particulars with that paper which has just been read, and which, unless some remarks are made about it, would

probably go down as the unanimous consensus of opinion of the Section. It seems to me that there were a good many cases in which fractures of the lower end of the humerus are better treated in a flexed than in an extended position, and I think that the reason possibly that we get the various bad results which Dr. Allis has mentioned, of loss of function on account of the destruction of the normal angle between the humerus and the ulna, is on account of their using, as he says, arbitrarily manufactured splints. I think you must adapt your splint to the patient, and if you take an arbitrary rectangular splint and tie a broken arm to it, you will probably get a worse result than if you let the arm hang in a straight position and put a board on the front of it. But it seems to me that neither of those methods is as rational or scientific as placing the arm in a position of right angles, and then adapting the splint to the particular shaped arm that you have to deal with; and not only that you should come down to the wrist, but that you should come down and include the wrist in the splint. I turn the hand with the palm upward, and as the splint is being applied for this purpose I prefer plaster-of-paris rubbed into the meshes when it is put on, rather than to put on a bandage and pepper it over the surface with a plastic substance, as Dr. Allis suggests. And while you are putting on this you put the arm in a position so that the forearm is in a normal position, and then when you get a final recovery you will not have lost the carrying power, you will not have destroyed the relation of the external and internal condyles to one another, and you will have an arm which if you should have the mischance to get ankylosis, which is very improbable unless it is a very bad case, is in a more useful condition than if the arm is straight. I think that except in cases of exceptional severity, fractures of this kind should be so treated that the man is able to go about his business, and if he is a professional man he can attend to a good deal of work and not suffer this loss.

DR. L. C. LANE, San Francisco—As Dr. Sayre has said he wishes to put himself on record, not entirely upon the side of Dr. Allis, that is in favor of the flexed position, I wish, on the contrary to be on record as in favor, wholly, unconditionally, and forever in favor, of treating in the straight position. I have treated over one hundred cases of fracture of the elbow of different kinds, and have never had a bad result when I treated in the straight position; we have a great deal more muscularity in the front than behind. In the fracture at the elbow, the joint is usually torn, or some of its muscles are torn, and if you put the arm in this position (illustrating) these torn muscles here about the blood vessels, here about the nerves, heal, and with the cicatricial contraction of the vicinity, fix and hold those blood vessels so that there is danger. When the arm is kept in the straight position the several irregular surfaces or hollows, that is, the concavities or convexities one fills the other; but when you bend it in this way (illustrating) you leave hollow spaces, into which cicatricial or neoplastic growth will come in and interfere greatly with your passive motion. The only point on which I disagree with Dr. Allis is in regard to passive motion. He would defer it for some three or four weeks. I would have it a great deal earlier. I would say in regard to Dr. Allis, he is really the author of this method of treating in the straight position. That credit is given to him in some of the foreign authorities, you will find it in Billroth's "Surgery." He has the credit of recommending that position, and he has fought for it. When he began he was almost the only man in the United States in favor of it.* As I say, I agree wholly with the plan of Allis, except I would commence passive motion earlier than he does.

DR. BERGSTEIN, Nevada—It is almost unnecessary for me to add anything now that Prof. Lane has robbed me of my thunder. And it is not surprising, considering that he taught me. But I can add this, that while dressing the arm in a flexed position may be more scientific, the proof of the pudding is in the eating thereof, and for twenty odd years I have treated a large number of cases of fracture, extending into the elbow joint, in the straight position without a single failure or a loss of a particle of the usefulness of the member. I have generally made my splints from that magnificent material known as a shingle, and have padded it with cotton. I have begun passive motion in three weeks, and have never seen bad results follow it.

DR. KURTZ, California—I only add a few words to what has been said already, and that is this: Whether we get ankylosis, or partial ankylosis from the extended position, or from the flexed position, it is immaterial; if you get that far, you will have great difficulty to remedy the evil by simple passive motion. It has been my practice for many years to add to passive motion, massage. I think that no fracture should be treated without massage. But fracture in the neighborhood of the joint, and fractures of the elbow most particularly, leading so often not only to ankylosis but to suits for malpractice, I would suggest to you never to omit to practice massage, say from two weeks after the occurrence. It can be just as easily practiced as the passive motions themselves.

DR. C. A. WHEATON, St. Paul, Minn.—I would like to occupy the attention of the Section for only a moment to express my gratification at the position taken by Dr. Sayre. The title of the paper, it seems to me, is decidedly ambiguous. It speaks of fractures at the lower end of the humerus. The gun-stock deformities of fracture at the elbow joint, as a rule, result from fracture of the internal condyle. If we have a fracture of the lower part of the humerus, involving the elbow joint and we attempt to put that fracture in position it seems to me that there is a very strong liability of the overriding of those fragments and the impairment of the ultimate usefulness of that joint. I do not know Dr. Sayre's position exactly, but it seems to me that the anterior angular splint, such as I was taught to use, applied to the anterior surface of the forearm, bringing the fulcrum of the lever at the apex of this splint at the elbow joint, tends to mold these fragments into bad position. Such a fracture can not be molded into position and held there, with the expectation of getting a useful joint, unless it is put in an anterior angular splint, such as we were taught to use in our earlier days; consequently it is my belief that these fractures ought to be treated in the rectangular position.

DR. HORTON, Texas—I have but one or two remarks to make with reference to the discussion and the position of the gentlemen on the two sides of this question. In the first place we should recall the principles laid down in all questions of fracture; first muscular relaxation, afterward the position of the broken fragments. I understand that that underlies all questions of treatment. So far as we can judge of the questions which have been presented to us in the management of practice, it would be about this: That they rely upon the splint, whatever may be used, a straight one or an angular one, for the accomplishment of the entire cure. I do not so comprehend it. This is a principle which I want to impress upon our minds; that unless there is relaxation of the muscle and adjustment of broken surfaces, I care not what the treatment may be, you will certainly not secure a good result. And I ask you to think of that proposition a moment. After that has been accomplished I care not, so far as I am concerned what principle you may use; you may use a straight splint, and I have also used the angular splint as well. I have had a reasonable experience of forty-five years, and I have never had a bad result on the lines of that practice when I secured the principles laid down.

DR. THOMAS, Pennsylvania—If the fracture is above the condyle, a transverse fracture, I think a right angle splint is probably as good a splint as we can use, but if there is a fracture of one or the other condyle, as Dr. Allis says in his paper, and we put on the right angle splint, by removing the bandage and attaching the arm to that splint and the forearm, and pulling up the forearm, you take up the fractured condyle with it, and so long as you keep the forearm in the rectangular position it looks very pretty, but when you change it you find it can not be pulled up. Now you may talk about the relaxing process of the muscles, but in a fracture of one or the other condyles by placing it in such a position the condyle, itself, keeps the fragments in position. My experience is that my cures are almost perfect in that manner, while in the rectangular cases they are not.

The paper of DR. S. E. MILLIKEN, New York, on "Tendon Grafting for the Deformities following Infantile Paralysis" was read by title, the author being absent.

Evidence of Appearances will not Discredit a Post-Mortem.—The fact of a number of persons meeting another from time to time, and observing nothing in his appearance to indicate ill health, the Supreme Court of Indiana holds, in the case of Sharpe v. Commercial Travelers' Mutual Accident Association, decided April 25, 1894, raises no conflict upon the evidence of a post-mortem examination, for example, as to the existence of fatty degeneration of the heart and brain.

DIAGNOSIS AND TREATMENT OF PROSTATIC ENLARGEMENT.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY WM. T. BELFIELD, M.D.
CHICAGO.

The prostate of mammals in general is a purely sexual gland, often separated by a considerable space from the bladder, and entirely independent of this organ; in some animals (*e.g.*, the ram) the prostate is lacking; in others (the squirrel) it is entirely suburethral. In some mammals, notably man, the prostate presents an intimate anatomic relation with the bladder; its muscular fibers completely encircle the urethro-vesical orifice, and perform the function of a vesical sphincter. The human prostate lies at the junction of the genital and urinary channels, and it is intimately associated in function with both; it, moreover, almost includes that vestige of the Müllerian duct, the prostatic utricle; through it and around it courses the blood to and from the bladder.

While the etiology of prostatic enlargement still remains a matter of speculation, it is certain that the earliest clinical symptoms are due to vascular engorgement of the prostate and by consequence of the bladder. The actual increase in the size of the gland should not obscure the other factors in producing the symptoms, which may be out of all proportion to the perceptible enlargement. The factors contributing to the familiar symptoms associated with prostatic enlargement are:

1. Venous congestion and edema of prostate and bladder.

2. Fibroid thickening of the vesical (prostatic) sphincter, often extending to the detrusor and to the prostate.

3. Suppuration in the prostatic urethra (glands and utricle).

4. Hypertrophy of the prostatic elements (glandular or muscular or both).

5. Chronic retention of urine, due to any one or all of these four antecedent conditions.

The most important as well as the most difficult task in diagnosis, is the differentiation among these various morbid states; for the prognosis as well as the treatment is determined by the predominance of one or another of them. For example a prostatic patient complains of frequent and painful urination; the chief trouble may be an aggravation of the usual venous congestion, in which case a brisk laxative, suppositories of icthyol and ergotin and strychnin internally will secure speedy relief. Again, the symptoms may be due to prostatic suppuration, in which event irrigation of the deep urethra with hot water containing hydrastin or silver nitrate is needed; or the frequent urination may be simply the overflow of a distended bladder, which is relieved by the cautious daily use of a clean catheter.

It would far transcend the allotted limits of this paper to discuss the differential diagnosis; I can only emphasize the statement that the symptoms clinically associated with prostatic hypertrophy depend upon several distinct morbid conditions, of which the mechanical impediment to the exit of urine may be the least; and that no routine treatment can be prescribed—the requirements varying with the case.

Our resources for meeting the needs of different patients may be thus summarized:

1. Medical—a. Improvement in the circulation through prostate and bladder is favored by proper diet and exercise, avoidance of constipation, massage of prostate between a sound in the bladder and finger in rectum, and by the daily use of a clean catheter; internally, ergotin and strychnin are certainly useful.

b. Suppuration in the bladder neck requires irrigation of the prostatic urethra with hot water, solutions of hydrastin, silver nitrate, etc., in addition to the measures already mentioned.

c. Induration and distortion of the bladder neck may be improved by dilatation with large sounds or a special dilator.

In a certain percentage of cases the time arrives, sooner or later, when these measures fail to relieve, and more efficient and immediate aid must be rendered.

2. Surgical Methods.—a. The simplest is a puncture of membranous urethra from the perineum, and introduction of a drain which is permitted to remain for a couple of weeks. The subsidence of congestion and edema, the cleansing of the bladder thus induced, sometimes makes an apparent cure for many months. Puncture with a trocar through the prostate (Harrison)[1] or drainage of the bas fund behind the organ (Belfield)[2] is even more desirable.

b. By a perineal urethrotomy the surgeon can secure not merely drainage but also thorough digital stretching of the prostate, and the incision or excision of obstructions at the orifice of the bladder.

c. More satisfactory excision of prostatic obstructions has been accomplished by a combination of suprapubic cystotomy with perineal urethrotomy—now a standard operation.

Within the past year there have been reported attempts to relieve the sufferings of the prostatic by securing atrophy of the enlarged prostate; by Bier,[3] through ligation of the internal iliacs, and by Ramm,[4] through castration. Bier reports three cases; in one, death from septic peritonitis occurred; in the remaining two, marked reduction in the size of the gland and decided improvement in symptoms are reported. Castration alone is said to have caused the same results in Ramm's two cases.

It would seem that, however efficient either of these dubious operations might be as a preventive of prostatic hypertrophy, their success as curative measures must be limited; for while they may be expected to induce atrophy of the gland proper, it seems questionable whether they would cause absorption of the new growths, arrest of suppuration, removal of the fibroid degeneration, and complete evacuation of the diseased bladder—any or all of which may be essential to a cure. However, clinical experience rather than speculation may decide these questions.

Two new operations upon the enlarged prostate itself have been recorded—one by Nicoll,[5] who made a submucous removal of the entire prostate from the perineum in two cases with good result. The other, by the present writer,[6] combines the removal of any part or all of the prostate with perfect drainage of the bladder and deep urethra. By incision into the ischio-rectal fossa, the prostate and trigone are laid bare and incised in the median line; each half of

[1] Surgical Dis. Urin. Organs, 1893.
[2] Jour. Am. Med. Assn. 14, 1894.
[3] Wien. Kl. Wochenschrift, 32, 1893.
[4] Cbl. f. Chir. 17, 1894.
[5] Lancet, 15, 1894.
[6] Jour. Am. Med. Assn. 14, 1894.

the prostate can be enucleated to any desired extent. A suprapubic incision—robbed of its danger by the perfect drainage secured through the posterior wound—can be made if required for freedom of manipulation. This operation seems to meet all the indications of all cases—perfect drainage, excision and enucleation not only of prostatic outgrowths but also of the entire gland if required.[1] It is undoubtedly too severe for feeble patients to endure; but so, unfortunately, are most operative procedures. Like the measures of Bier, Ramm and Nicoll, its clinical value must be determined by extended experience.

Such are our resources, medical and surgical, for relieving the distress and preventing the fatal consequences of prostatic enlargement; and probably no other disease of the genito-urinary organs tests to an equal degree the knowledge, judgment and art of the surgeon. The day has long passed when the sole treatment for prostatics was the routine, sometimes careless and bungling, use of the catheter. While these patients commonly exhibit the impaired vitality of age and often the added effects of renal insufficiency, yet as a class they are far more amenable to treatment than our standard literature leads us to suppose.

SYMPTOMS AND TREATMENT OF TUMORS OF THE BLADDER.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY JOHN B. DEAVER, M.D.

PHILADELPHIA, PA.

The earliest and most constant symptom of tumor of the bladder is hemorrhage; this usually appears before irritation of the bladder.

When vesical tenesmus and frequency of micturition precede hemorrhage, malignancy should be suspected.

Hemorrhage from the bladder occurs towards the end of micturition. The first urine passed is clear and as the bladder empties itself it becomes blood stained, while the last urine passed is of a bright red color due to the presence of fresh blood. Following exploration of the bladder, the first urine passed is uniformly blood stained. Confusion may arise in cases of hematuria as to the source of the hemorrhage.

When the hemorrhage is from the kidney and of idiopathic origin, the blood is intimately mixed with the urine giving it a reddish brown color, while if traumatic in origin the blood is passed as clots which assume the shape of the ureters, being passed in whole or in parts. Clots from the bladder are irregular in size and shape. The hemorrhage is usually intermittent and irregular, and particularly so in the more solid tumors.

Pain, as a rule, is an unimportant symptom except in the advanced stages of the malignant forms of growths, and then usually accompanies the increased micturition. In some cases, however, there is pain referred to the loins and hips.

Characteristics of the Urine.—The urine in vesical hematuria shows the presence of red and white blood corpuscles. Shreds and cells of the growth may be found in the normally voided urine. By forcibly washing out the bladder, particles of the growth are more likely to be found. The evacuator which is used in the crushing operation for stone is a more reliable means of securing a specimen of a growth. The lithotrite may be used to confirm the diagnosis. The stream of urine, as a usual thing, is not altered, yet in the pedunculated forms of tumors, especially when situated near the mouth of the bladder, it may be interrupted, thus simulating stone. The sensation communicated to the fingers upon the introduction of the sound frequently gives valuable information, also a digital examination per rectum or vaginam; by these means the growth may both be located and its approximate size made out. The most valuable instrument in the diagnosis of tumors of the bladder is unquestionably the cystoscope. I have repeatedly been able to diagnose the situation, size and character of bladder growths by means of this instrument, and afterwards confirmed it by operation. Digital exploration through a median perineal cystotomy, formerly a common practice, has been displaced by the cystoscope. In the female, digital exploration through the urethra will usually suffice to establish a diagnosis, but does not offer the same advantages as the cystoscope.

Treatment.—The treatment resolves itself simply into the choice of operation. Suprapubic cystotomy offers the greatest advantages in the majority of cases. By the suprapubic route more room is gained for manipulation, the interior of the bladder can be illuminated by the electric head light, thus permitting the growth to be dealt with to the best advantage, and the hemorrhage can be more readily controlled. In sessile growths, curettement is the method or removal. The pedunculated growths are best removed by the wire serre-nœud or the cautery scissors. In the latter variety of growths, if situated near the mouth of the bladder, in the absence of great prostatic enlargement, median perineal cystotomy is the preferable operation.

I report the two following cases which illustrate the different operations:

Case 1.—Papilloma of the Bladder (Perineal Cystotomy).—C. L., age 45 years. For some months prior to admission to the German Hospital, he suffered from painful urination. The urine had frequently been charged with blood. There was present a constant dull pain in the hypogastrium. Cystoscopic examination demonstrated the existence of a sessile lobulated growth on the antero-lateral surface of the bladder. Median perineal cystotomy was decided upon as the most suitable operation. The bladder being filled with a boracic acid solution, the staff was introduced into the urethra and a median incision made from the central point of the perineum down to the staff, and thence along its groove into the bladder. A growth about the size of a small egg was revealed and thoroughly curetted from the mucous membrane. A soft catheter was passed into the bladder through the perineal wound and stitched in position. To the end of the catheter was attached a long rubber tube serving to carry off the urine into a vessel under the bed. Convalescence was uninterrupted. The perineal wound closed rapidly. The patient was discharged two weeks after the operation.

Examination of the growth showed it to be a simple papilloma. It weighed scant two ounces.

Case 2.—Suprapubic Cystotomy for Papilloma.—Perineal Cystotomy for Recurrence.—Death from Exhaustion.—G. W., age 45 years, was admitted to the German Hospital, April 15, 1893. Personal and family history good. Six months before, he suddenly developed an attack of hematuria, with dysuria. All symptoms then subsided. About a month before his admission to the hospital, the patient noticed a return of the original trouble; his condition became steadily worse, the hematuria and dysuria being alarmingly severe. The act

[1] I have since modified this as follows: supra-pubic incision, perineal urethrotomy, division of prostate in median line from capsule upwards to urethra; large drain and tamponade of iodoform gauze in lower wound, suture f upper.

of voluntary micturition became very difficult and finally impossible, and repeated catheterization had to be resorted to. The urethra finally became so sensitive that the passage of the catheter occasioned much suffering. The urine was always rich in blood and small clots. He was admitted with the diagnosis of a probable papilloma with blood clots in the bladder. Suprapubic cystotomy was performed. The surface being thoroughly prepared, the abdominal incision was made and the bladder exposed. The bladder was picked up with tissue forceps and a silk thread passed through its wall for the purpose of making traction thus facilitating the next step in the operation—the incision into the bladder. This was now opened by a longitudinal incision. Examination revealed the condition suspected; the bladder was practically filled with blood in a more or less advanced stage of coagulation. Fully two handsful of clotted blood, part of which was quite firmly organized and closely adherent to the mucous membrane were removed. After it was thoroughly emptied of its contents, a close inspection of the lining membrane of the bladder revealed the existence of a small papilloma on the posterior wall.

The little growth was cut away and the bladder thoroughly irrigated with boracic acid solution. A rubber drainage tube was introduced into the bladder through the abdominal opening, and the latter closed. The patient reacted well, and convalescence was uninterrupted. At the time of his discharge, May 17, the suprapubic fistula had entirely closed, and the urine was passed without difficulty through the normal channel.

On June 30, the patient returned, giving a history of several attacks of hemorrhage since his discharge from the hospital. He now sought relief from an existing attack that had baffled all attempts made to check it. The usual styptic methods failing, it was decided to perform a perineal cystotomy. Thorough drainage was effected by the reëstablishment of the original suprapubic opening and the newly made perineal incision. One week afterwards, a violent hemorrhage took place, but was easily controlled. A growth gradually developed involving the whole bladder wall, and ulcerating through the abdominal wall.

At the autopsy, August 11, the growth, a carcinoma fully as large in size as a fetal head was removed.

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C. F. BUCKLEY, M.D.

SAN FRANCISCO, CAL.

The original intention which I entertained relative to this paper had to be abandoned, owing to the vastness of the subject. I considered it must involve too much of the Society's time, and lead in the main to rather inhospitable results, as the question of tumors of the bladder in their extensive bearings and differentiations is one affording more than the ordinary amount of learned and unlearned expressions of opinion to the gentlemen who devote their attention to this branch of medicine. Take, for example, the small matter of the cystoscope alone, and the opinions as to its value in diagnosis are certainly as diverse as the colors of the spectroscope, while such careful observers as Guyon of Paris, and Thompson of London, represent the extremes of divergence.

There is one very conspicuous fact, however, in relation to this whole subject, and that is a complete absence, among all the most prominent observers, of anything like a consistent or intelligible effort at an explanation of the etiology of tumors of the bladder. Hence I have decided to term this paper, "Papillomata of the Bladder," arising from external injury, and while I do not claim that such is always or even commonly the cause of such tumors, I offer a few cases which appear to me very significant and worthy of consideration in this, that they may lead to a line of inquiry in a direction hitherto unnoticed. In one of the three cases which I shall report, the relation of cause and effect is very definite, and almost unmistakable, while in the other two, there may be room for some doubt though a strong presumptive evidence in favor of my views:

Case 1.—In the summer of 1875, while on a visit to Europe, a gentleman friend of mine thought proper to consult me regarding his health. He was a fine healthy specimen of manhood, about 45 years old, stout and robust of frame and general constitution. A generous liver but not a glutton; accustomed to spend most of his time in the open air, a great deal of it on horseback; and for nearly twenty years prior to this time he followed hounds quite frequently. He married early in life; had a large and healthy family. He never had any form of venereal disease. He never knew anything about ill health until about November, 1873, when he had a partial fall—so to speak—from his horse in hunting. The horse stumbled over a fence, and, to use his own expression his "crotch came heavily down on the pommel of the saddle." For a little while he felt faint and had some disturbance of the stomach. In about half an hour after the fall, however, he was able to ride home, and for ten days afterward was confined to bed, complaining of considerable pain in the pelvic region, and passing urine very frequently, which at intervals had some blood mixed in it. His bowels were also kept quite free during this time, but this he considered due to the medicines prescribed by his attendant. After two weeks he was able to move around again, but from the time of that injury he had more or less discomfort from the frequent passage of water, but not very much pain. The necessity of passing it had grown to become very urgent, and as a consequence a great source of annoyance, owing to its indelicacy. His medical adviser told him he passed some blood in the water but he never observed anything of that kind himself. On passing a No. 7 English sound into the bladder I found a rough gritty sort of substance, which felt very like a stone, but did not give the clear ring which a calculus usually does when the metal strikes against it. This was in the inferior or posterior portion of the bladder, not far from the neck. I then advised that he should go up to London and have an operation performed, as it was the only method of effectually removing the difficulty. There were some doubts as to the nature of the difficulty, but these would be speedily decided by an operation, and at the same time the disease could be readily removed. My advice—like most gratuitous ones—was temporarily ignored, but a year or more later it was followed, and my friend then wrote in a cheerful way—"I have at length done as you advised; a tumor nearly as large as a pigeon egg has been removed from my bladder and I feel almost as well as ever I did." This improvement has remained, and writing not long ago he remarked: "I never since had any trouble with the bladder, but of course I do not enjoy the saddle as I used."

Case 2.—In February, 1888, a young gentleman 19 years old was brought to my office in a perfect state of collapse, unable to raise his head or talk, though evidently not unconscious. He was reported to have fallen from a buggy. While examining him with some care he revived sufficiently to inform me that he was employed by a real estate firm, that he was out posting bills on various premises, and on one occasion, having to reach high, he stood on one of the buggy wheels to achieve his purpose. While in this position, unfortunately, his horse moved, and he fell heavily—for his legs were rather long—astride of the wheel, his perineum thereby receiving the whole brunt of the fall. Around this region there was general diffused ecchymosis and on passing as ound per urethram, there seemed to be much difficulty in reaching the bladder. The sound more easily got around the organ than into it. After withdrawal of the sound which had been used without any force, a copious hemorrhage followed. Recognizing that I had to deal with an intra-cystic hemorrhage from some source, I determined on an operation to control it as soon as possible. I had the youth removed to his home as quickly and safely as possible, and shortly after, by the median operation for lithotomy, discovered the offending ruptured bladder.

I was amazed at the extensive injury beneath the surface without any laceration of the skin, and this fact may have a very extensive application in a medico-legal direction. I ligated six good-sized blood vessels—three on each side—and brought the sundered edges of the bladder together with fine sutures of catgut, placed a gum elastic catheter in the bladder, and subsequently treated the injury as if the

median operation for calculus had been performed. The patient made an excellent recovery, though his nursing had never been characterized by the highest efficiency; the ligatures and sutures were all carefully counted at the time of the operation, and subsequently correctly accounted for. This young man never had any form of venereal disease.

About three months after he left his room, he consulted me about an irregular difficulty of passing water which seemed to grow worse. "At one time he could pass water quite freely, but lately it seemed to grow worse and it acted strangely. Sometimes he noticed no difficulty whatever, but on other occasions it seemed to be suddenly obstructed, and this occurred most commonly as the last portion of the water was about to leave the bladder. Something seemed suddenly to close the passage." In passing a sound I noticed a distinct contraction of the membranous urethra, and considered I had to deal with a common spasm due to stricture. I proceeded to dilate this with the daily use of sounds and, after ten days of treatment, on passing a No. 12 English sound with a sharp curve into the bladder, I noticed a rough but yielding mass that reminded me very forcibly of the prior experience. In this case, however, I considered that the sensation yielded by the sound may be due to a neglected suture or ligature, for, as I remarked, the nursing was not of the most efficient character. I felt that some foreign body had entered his body, and at once the lithotrite suggested itself to me as a judicious means of removing it.

These three cases contain many points of interest. In the two former, of the lobulated variety of papilloma, I think the evidence is quite clear that they were directly due to injury of the perineum; and furthermore, they were both unaccompanied by any hemorrhage at any stage of their development except, probably, at the outset, and both were covered by a calculous deposit. In the third case, there was no history of venereal disease—a complete immunity from all bladder symptoms, up to a short time prior to death, and no hemorrhage, though the disease was evidently of long standing.

The lithotrite suggested itself as the proper appliance to remove this foreign body, as I regarded it. I accordingly used it, and after careful manipulation succeeded in grasping a substance that was rough and quite gritty, offered little or no resistance to crushing, but when withdrawing the instrument an unpleasant resistance was offered, so much so that I was obliged to separate the blades, change their direction and withdraw the lithotrite without any substance in its grasp. An unpleasant hemorrhage followed and kept up for three days with such persistency that I determined again upon a median operation in the old cicatrix to the offending vessel. To be brief, I discovered in the bladder near the line of the incision a tumor larger than a good sized pea and covered over with an incrustation of calculous deposit. I removed it without difficulty, by a fine wire écraseur. I experienced little or no trouble from hemorrhage, again treated the patient as one who had undergone a median lithotomy. Recovery was speedy and natural, and since then, a period of over six years, I have not heard any complaints touching his urino-genital system from this young gentleman who at the present time seems in splendid health.

A gentleman of 55 years old, plethoric and fleshy in appearance, consulted me in April, 1889. He complained of all the general symptoms of cardial degeneration, of the presence of which the lithoscope immediately left no doubt. Of late he also "suffered a good deal from frequent desire to pass water, and quite often had passed little particles like flesh from the bladder, which he did not understand." He had never passed blood from the bladder. Had practiced law in Nevada in earlier life; had frequently long rides in the saddle; did not remember any one particular hurt or injury while riding, but had frequently some "hard knocks," and hurt a testicle badly more than once. Nephritis and cystitis, both in an advanced degree, forbade any instrumentation, and so with general tonics I recommended a sojourn in a warm country place. This advice was adopted. In the middle of May the patient died suddenly and to subserve a great many purposes a careful autopsy was made. The heart was fully the size of the ordinary ox heart; the kidneys were both large and waxy, and the bladder was one mass of papillomata of the fimbriated type.

TREATMENT OF URETHRAL STRICTURE IN THE MALE.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held in San Francisco, June 5-8, 1894.

BY JULIUS ROSENSTIRN, M.D.
SAN FRANCISCO, CAL.

To give you an elaborate description of all the different devices to relieve suffering man from strictures of his urethral canal would be very tiresome indeed. Fortunately, the ten minute limit precludes any such wild desire on my part, and I shall give you simply a brief aphoristical record of my personal views and conclusions, drawn from a rather ample experience. Urethral strictures are attacked either by gradual dilatation, rapid dilatation, divulsion, electrolysis, internal or external urethrotomy or both combined, either the perineal or high section or urethrectomy with or without urethroplasty. The treatment of strictures varies according to their size. Strictures of large caliber as over No. 14 or 15 French, (a French measure that is the only rational one and should be universally adopted) should nearly always be treated by gradual dilatation. Metallic sounds are the best for the purpose. Use antiseptic precautions. Clean the glans and prepuce well with soapsuds, then with ether and alcohol, finally with solution of 1 to 1,000 bichlorid or 5 per cent. carbolic acid. Wash out the urethra through soft catheter with solution of Condy's fluid 1 to 50, then cocainize urethra with 5 per cent. solution. Sterilize your sound, lubricate with 10 per cent. borated glycerin, and you are ready for introduction. Never push the sound into the bladder but stop at the membranous part.

I had a good many troublesome cases of cystitis come to me where the patients dated the commencement of their suffering back to the first introduction of an urethral sound. I leave the instrument in ten to fifteen minutes, to stimulate absorption of products of inflammation in the urethral wall by pressure massage. After two or three days' rest during which time, in irritable cases, salol, salicylate of soda, boracic acid or quinin can be given in full doses, night and morning, you introduce the same size again and will be able in most instances to use immediately afterwards the next size. For some strictures of large caliber in the pendulous portion of the urethra of older date and unyielding in character, internal urethrotomy is recommended. I have not often in my own experience found it necessary, and believe it is well to remember that a vast majority of these so-called large calibered strictures are physiologic narrowings and ought to be left severely alone. Another exception must be made for true stricture of the meatus and fossa navicularis, which can be quickly and safely cut at the floor by a short convex blunt pointed tenotome. I underline here true strictures, for as Keyes says, meatotomy and anterior urethrotomy have run riot in the profession and have led to much unnecessary surgery and some positive injury. Strictures of small caliber, that allow the passage of a sound, should also be treated with gradual dilatation. I rarely try the introduction of metal sounds below No. 7 or 8. Injuries to the urethral walls and false passages are in the majority of cases traceable to such attempts. Flexible bulb-tipped bougies should be used. If even the smallest size does not pass readily, a prolonged pressure can be exercised by fixing and holding it against the stricture for several hours.

If that does not succeed, the filiform whalebone bougies should be tried, either the straight, angular or screw-tipped. Sometimes by introducing successively several filiform bougies, side by side, one is made to pass. If one should only enter the stricture and not pass it, the bougie can be tied there and left twenty-four hours *in situ*, after which time it often passes. Should no pressing symptoms exist at the time, you can leave the filiform bougie for one or two days, after Lefort's method of "dilatation—immediate progressive," with the certainty almost, that other bougies can be passed alongside and may be used as a guide for a tunneled catheter or for soft and metal bougies. If expediency is necessary the introduction of a tunneled catheter can be tried over the guiding filiform at once, or the whalebone bougie may be used for a guide to perform external urethrotomy. Every careful and persevering effort should be employed to succeed in gradually dilating even these refractory strictures. Internal urethrotomy of the posterior urethra with the Maisonneuve or Teevan's instrument from before backward, or from behind forward with the old Civiale, or Sir Henry Thompson's modification, or Roser's urethrotome and our own Otis' instrument is an operation I most heartily dislike. I consider it dangerous and unsurgical and believe it will be abandoned like the discission of the cervix uteri by the uterotome. I used it formerly, also, in the few strictures of the anterior urethra that resisted dilatation, where I now leave a bougie *a-demure* for about twenty-four hours with antiseptic washings and obtain excellent results; and in the exceptional cases where in spite of the most careful asepsis, rigors and urethral fever followed each and every introduction of a dilating instrument, the patient refusing external urethrotomy; or in cases with multiple strictures where I performed external urethrotomy on the most central one, cut the others internally and plugged the urethra in front of the opened part for several days with iodoform gauze. Fortunately, I never met with a serious accident from internal urethrotomy, but the possibility of infecting the deeper strata of the wounded urethra, the danger of uncontrollable hemorrhage always gives me a feeling of uncomfortable insecurity when I am forced to undertake it.

External urethrotomy with Symes' staff and Teale's probe gorget as described by Treves in his admirable book, should be the operation of choice in all strictures of the deeper urethra where gradual dilatation is impossible. Perineal section takes its place where no instrument, however small, can pass the stricture. I performed it twice after Wheelhouse's method, the urethra being divided over the end of his staff, the urethral walls held apart by long threads drawn through it, the central opening found either by the eye or probing, and cut into on the probe gorget. I prefer this method to Cook's operation, where "you go it blind," having as a guide only your index finger in the rectum pressed against the apex of the prostate gland. With all these manipulations and operations the strictest asepsis and antisepsis must be exercised, together with internal administration of drugs for rendering the urine sterile or even give it some antiseptic properties. For external and internal urethrotomy, as well as perineal section, the introduction of a full-sized metal bougie immediately after the operation and at regular intervals of a few days afterward, till dismissal, must not be neglected. It insures better than anything else the healing and closing of the wounds. I was forced on one occasion to apply retrograde catheterization. Four years ago the son of a dear friend and colleague, out hunting, dragging his gun after him, received its entire load of shot into the perineum and adjoining parts, lacerating the scrotum and penis in a frightful manner. The boy remained on the ground six or eight hours before he was found; there was retention of urine relieved only by puncture of the bladder and aspiration, until I arrived about two days after the accident. It was impossible to see anything in the swollen and lacerated parts. I opened the enormously distended bladder and drew a soft rubber catheter from behind forward carefully through the remnants of the urethra and united the lacerated parts over it. It was done easily and should be practiced in all cases where after a thorough search the posterior opening of the urethra can not be found. Urethrectomy, excision of parts of the urethra on account of very callous and fibrous indurated urethral and peri-urethral tissue has been successfully practiced after Guyon by quite a number of European and American operators. In cases of traumatic stricture, Guyon excises the hardened peri-urethral tissue, and insists upon the removal of the entire circumference of the indurated part of urethra, in opposition to others who leave the upper wall. He deems it unnecessary to unite the cut ends of the urethra, but sews the surrounding parts with a double row of buried continuous catgut sutures and adds an external row of deep and superficial silkworm-gut sutures. He leaves a permanent catheter for three or four days; the results are excellent.

Urethrectomy has been combined with urethroplasty; the substitution of the removed part of the urethra by transplantation of some other piece of mucous membrane. Pieces from the inner layer of the prepuce, after Meusel, have been used most frequently, but various other sources are made to serve, from the prolapsed uterus of lovely woman down to the esophagus and bladder of the guinea pig. The methods of divulsion or forced catheterization are most reprehensible and unsurgical. They possess all the faults of internal urethrotomy with the additional ones that the wounds made by the operation are rough and lacerated and unknown in their extent.

No general definite conclusions have been arrived at as to the therapeutic value of electrolysis. My own experience would not justify as great an enthusiasm as most of its advocates demonstrate, or as severe a condemnation as comes from the members of the opposing faction. In a few cases a very careful employment of this method seemed to ease and hasten the progress of gradual dilatation; in a great many others no effect could be attributed to its application. I have not as yet used Deno's water electrode for this purpose, an instrument that is reported to permit the application of forty to sixty milliampères without pain and with great success.

The surgeon called upon to treat stricture of the male urethra will be impressed with the fact that the great therapeutic maxim of our craft, *nil nocere*, should be foremost in his mind.

Gradual dilatation is always a safe method and should be employed whenever feasible, although it lacks the great desideratum of permanency in its curative effects. I doubt very much that internal urethrotomy is any more lasting. I have seen a

great many relapses after this treatment which, together with its many objectionable features, gives external urethrotomy or one of its allied modifications the decided preference in all instances unsuitable for gradual dilatation.

THIRD DAY, JUNE 7.

The following papers were read by title, their authors being absent: "Effects of Obstruction in Urination upon the Bladder and Kidneys," Dr. J. William White, Philadelphia, Pa.; "Diagnosis and Treatment of Enlargement of the Prostate Gland," by Drs. Hunter McGuire, Richmond, Va., and William T. Belfield, Chicago, Ill.; "Symptoms and Treatment of Stone in the Bladder," Dr. William T. Biggs, Nashville, Tenn.; "Symptoms and Treatment of Tumors of the Bladder," Dr. John B. Deaver, Philadelphia, Pa.; "Treatment of Stricture of the Urethra," Dr. Julius Rosenstirn, San Francisco, Cal.; and "Carcinoma of the Urethra, with a Report of Two Cases," by Dr. H. O. Walker, Detroit, Mich.

DR. C. F. BUCKLEY, San Francisco, Cal., read a paper on "Symptoms and Treatment of Tumors of the Bladder."

DR. HAUGHTON, Texas, read a volunteer paper of "How Best to Treat Wounds To-day."

DISCUSSION.

DR. R. H. SAYRE, New York, opened the discussion of the topic of the session, saying: It seems to me very unjust at this stage of medical science to attempt to detract from the immense progress which has been made in consequence of the views advanced by Prof. Lister. Carbolic acid, creosote, balsam of Peru, and various anti-bacterial agents have been used for a long time, but they were used simply because the people found out that the wounds did well when they were employed; but the great underlying principle of infection was not understood generally before that time. And certainly to James Lister belongs the credit of forcibly impressing it upon the minds of the profession to-day. And the reason that we had suppuration was because the wound was contaminated by substances introduced from the outside, and although in the beginning he made statements which very likely he was afterward very willing to retract, further investigations since his first experiments have shown that many appliances which were first thought necessary are by no means so. The principle which underlies the whole subject is still the same, and it is simply by increased experience that we have learned to arrive at the same results by means of simpler processes, because our knowledge of the subject is greater than it was when he first opened the door to us, and showed us how practically to put into execution the great principle of antifermentative surgery.

DR. HAUGHTON, Texas—It is not my intention to detract from anybody, but simply to give a historical *résumé* of this whole question so as to bring it fairly to our view. I think if the gentleman had heard the balance of the paper he would find out exactly where it leads.

DR. C. F. BUCKLEY, San Francisco, Cal., exhibited to the Section some specimens obtained in his own practice, including a slate pencil five and one-half inches long removed from the male bladder, and a series of gall-stones perfectly white, removed from the gall-bladder in life, by surgical operation.

DR. J. D. GRIFFITH, Kansas City, Mo.—I think that it is very little use to make rules with reference to the particular position in stricture of the urethra, divulsion, for cutting for rapid dilatation and for gradual dilatation; we make positive rules as to where these things should be done. Van Buren and Boulay (?) taught these things years ago, Guion is teaching them now, that is: It is easy to so dilate that cutting can be done internally in the urethra under the pendulous portion. Divulsion can be done on the deeper portion. Rapid dilatation can be done on the deep portion of the urethra, and gradual dilatation can be done on the pendulous portion. Those rules are safe. But if you divulge in the pendulous portion of the urethra, or rapidly dilate, either one, which almost amounts to divulsion, then you are very apt to either kill your patient—I have seen one death in eight hours from it—or to inflict a very severe shock. You can cut in the pendulous portion of the urethra, but if you go deep and cut then you are apt to have dangerous hemorrhage. I must say that I have not experienced the same amount of trouble in introducing the sound into the bladder, as some of these gentlemen speak of. If your sound is clean and if your urethra is clean back of the cut off muscle as well as in front of it, then I think you can safely introduce your sound. But this thing of a guide that the doctor was speaking of in his paper, the whalebone guide, I think is a dangerous instrument if it is not carefully watched. I know of but one way to find out whether my guide along the canal is too deep. That is after searching the urethra thoroughly with guides, say eight or ten or fifteen, you have got in each a lot of false passages, one of them slips through somewhere; how do you know it is in the bladder? That is the point I wanted to speak of particularly. I think it is very easy to determine that question. If the guide is in a false passage anywhere from the cut off muscle back and not in the bladder—because you want to be certain before introducing the instrument that it is in the bladder—holding the guide with your right, pass the forefinger of your left hand high up into the rectum and behind the point around the prostate, above it, and then if your guide is in the center line, in the bladder, you will be able to retract it easily. If it is in a false passage it will slip just as easy as it did before.

As to the cutting instrument, the gentleman has spoken of Bodice's (?) instrument, and mentioned Bank's most estimable instrument. There is no instrument to-day I know of that is equal to W. F. Fleure's instrument for large caliber strictures. It is the most complete and thorough that I have ever seen for this purpose.

DR. JOSEPH RANSOHOFF, Cincinnati—With regard to the danger of internal urethrotomy, in the olden days when Maissoneuve's instrument alone was used, when we could not with it get the instrument to hold a urethrotome larger than the 18 or 22 French, it was not uncommon to find that the operation, in the first place, was not permanently successful, nor was it rare to find a death following from septic fever. But with the dilating urethrotome those dangers have been practically removed, and I think that one of the safest operations we perform is internal urethrotomy as done with the dilating urethrotome. I do not advise what has been recommended by the essayist here, the use of the catheter. The reason I do not like to let the catheter remain more than three or four hours, or at the very furthest a day or two, is that I have seen some disastrous results from the use of catheters for a long time in the bladder. I know that in cases of enlargement of the prostate, catheters, soft in character, have been introduced into the bladder, and on account of the difficulty in finding the bladder the catheters have been allowed to remain. But the most violent and dangerous results will sometimes occur from the use of the catheter, allowing it to remain six or eight hours, even, and it is absolutely dangerous to let it remain more than twenty-four hours; whereas, internal urethrotomy is an operation which can be quickly performed. It has not the advantages that external urethrotomy has. It is an easy matter enough to make an internal urethrotomy. It is an easy enough matter to make external urethrotomy if you can get anything through. And here comes, to my judgment, the important point, and that is to get something through the channel. I confess that I lack the patience which belongs, I think, or ought to belong to the man who does a good deal of urethral work. Most of my friends, as well as myself, lack that patience which is so essential to pass things through the urethra. For that reason I dare say there is scarcely a year passes but that I have three or four or five catheteral operations that have to be done without a guide. In the hands of those who have great patience the practice of external urethrotomy without a guide would be materially increased. It is without question as has long been stated, the most difficult operation in surgery, and I am glad to see that the essayist spoke very kindly of an operation which has been practiced quite extensively on the continent of Europe, but has not yet found a footing on this continent that I think it is entitled to. I refer to catheterization from behind. Just before I came here I saw a patient who had been on the table two hours and a half and the surgeon was trying to find the deep urethra through an external examination. The region looked as if it had been passed through a sausage machine. I helped the gentleman out, and I had no difficulty in getting my finger under the arch of the pubes; I could get around behind the bladder and around the prostate, and between the prostate and the rectum. The man had lost his bearings and had simply looked around blindly for the urethra. That may happen to any one, for there is scarcely a surgeon of experience who has not failed to find the urethra. If I fail to find the urethra after what I think sufficient search, or if I have failed to make a Cox operation, which has given good results sometimes. I open the bladder and get at the difficulty from behind. There is no question

among those who have tried it with the introduction of the finger into the bladder, to introduce an instrument into the bladder from behind. It is an operation that I think will come into favor here, as it has on the other side of the Atlantic. I am glad to see that there has not been a man on the floor, in the discussion of this subject, who has spoken of urethral stricture who has referred to permanent cure of strictures. After all, it is a pretty sad lot that falls to the patient after the operation. Ordinarily a man will have to use an instrument at times all the rest of his life. All strictures are not alike; some will yield readily to simple dilatation; if we have this form of hard strictures that are tougher than any cartilage we can conceive of, no simple dilatation is going to effect a permanent cure.

DR. JULIUS ROSENSTIRN, San Francisco, Cal.—Although I have been attacked on all sides, still I am very glad that my paper, at least, has given foundation to so many able remarks on the subject. I have not been convinced altogether that I have made an error. That there can be urethrotomies made, internal ones, in the deeper part of the urethra, without danger or with success to the patient I do not doubt. I believe it is our great statistician, Harris, who has shown that Cæsarean operation has been done by Bull, who has opened by accident the uterus of a woman; most of those so opened do recover; still I do not believe anybody would recommend that as a safe and proper way to perform that operation. I do not believe that urethrotomy in the deeper portion is a safe method, because we can not guard against very dangerous hemorrhages; there is danger in this method, in spite of the assertions of the very able gentlemen here on the floor. I must say that if in such hands as those of De Aul (?) the mortality from urethrotomy is 8 per cent. I believe nobody can say that it is an indifferent operation. Such are the records of his hospital and his clinics. It is all very well to say, perfect asepticism protects against the immediate results of the operation. It may be for the time, but who will guarantee us that the deeper parts of the urethra opened may not be infected, and if there is infection on that urethral tissue, general infection may follow? I believe wounds that can be laid open with safety, can be accurately watched, should be treated in that way, and we should not rely on chance, as we have to in most cases of internal urethrotomy. In the pendulous portion, in cases, as was said here, of recurrent and hard and calloused strictures I have been perhaps more fortunate. I have not found very often the necessity, except when urged by patients where they are very anxious to get rid of it, to use the internal urethreter. I have gotten on very well with gradual dilatation, and I must say I have had no desire to try a method or apply what I consider a dangerous practice where I can get around it with absolutely safe methods.

As to electrolysis, that has been mentioned here by one gentleman; he seems to misunderstand my statement. I have not recommended it; I have said that I believe that in some cases it seemed to do some good; that in a great many cases I had no effects whatever. But certainly, although I have tried it a few times lately, I have not made it a practice to give it a trial in every circumstance from the result of my experience, and I do not believe I have expressed in the paper any great enthusiasm for it.

As to the catheter of A'Demeure, I have also mentioned in my paper that Guion uses it, but I myself do not use it. I have used a drainage tube in external urethrotomy cases for twenty-four hours, as long as I found it necessary, but I have rarely used the catheter of A'Demeure, except in those cases where the entire urethra was torn and the urethra united over the body of the catheter that was introduced through the open bladder.

I was asked to explain my idea of absorption in introducing a catheter and leaving it lie there for ten to fifteen minutes. I believe that just as we can by pressure and massage remove some exudations in the exterior parts, so we can by the same means do something similar in the interior organs. We think that by exciting the lymphatic glands and the vascularity of the parts, that absorption is stimulated by the taking up of inflammatory products in the surrounding tissues; that they are made more amenable to absorption. And it certainly seemed in the cases I treated that by thorough continuous introduction of a sound and leaving it to lie there for some time, that hard strictures cure swifter under the treatment by stretching and by absorption, and that is the explanation and the idea I had, by saying that, leaving the catheter or leaving the bougie for some time in the strictured parts stimulated absorption of the inflammatory products in the urethral canal.

THE PATHOLOGY AND SYMPTOMATOLOGY OF HEMORRHOIDS, ANAL FISTULA, AND ANAL FISSURE.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association held at San Francisco, June 5-8, 1894.

BY DAVID POWELL, M.D.
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HEMORRHOIDS.

Although anatomically divided into external and internal, and presenting some pathologic features peculiar to their situation, hemorrhoidal tumors are essentially similar in structure, whether located in the rectum within the sphincter muscles, or about the margin of the anus. Pathologically considered they are identical, and composed primarily of the same morbid elements—enlargement or varicosis of the venous hemorrhoidal plexuses, and infiltrated connective tissue.

Within the dense areolar membrane which enters into the structure of the lower part of the rectum and verge of the anus, is a network of tortuous veins, the inferior or external, and the superior or internal hemorrhoidal plexuses. From the former, the blood finds its way into the general venous circulation through the middle and inferior hemorrhoidal veins which communicate with the internal iliacs; from the latter, through the superior hemorrhoidal vein into the portal system. The absence of valves in the hemorrhoidal veins; the dependent position of the parts; man's erect position; distension of the rectal ampulla from fecal accumulation; obstruction of the portal circulation; pressure by the gravid uterus or any abnormal tumor upon the inferior vena cava or iliac veins, tend to produce the pathologic conditions which favor the development of hemorrhoidal tumors, viz: The varicosity of the veins, and the extravasation of their contents into the surrounding peri-vascular tissues.

In their incipiency, hemorrhoids, both external and internal, are merely a dilated or varicose condition of the veins of the submucous areolar tissue in the region affected, without intumescence or any appreciable tumor. But as the disease progresses a constantly recurring congestion and inflammation, from various irritating causes, produce very characteristic changes and modifications in the vessels and tissues involved. The veins become more and more expanded; their coats become thickened; the surrounding cellular tissue is infiltrated and indurated; the investing tissues hypertrophied by plastic deposit, and sooner or later a well defined swelling or tumor is developed. If external to the sphincter it appears as a rounded venous-looking tumor, purplish in color with an ill-defined base, just at the verge of the anus, running up into the bowel and covered with the thin sensitive skin of the part. During the straining accompanying forced defecation the veins become greatly distended, finally give way and the blood is extravasated into the surrounding connective tissue, forming a large, tense, globular, painful hemorrhoidal tumor. Upon section an external pile is found to be composed of hypertrophied integument, infiltrated areolar tissue, and one or several dilated veins containing coagulated blood. The presence of coagulum in the distended veins and surrounding cellular tissue is an important pathologic feature of an *external* hemorrhoidal tumor, and is of much prac-

tical moment when considering the application of remedial measures.

Internal hemorrhoids differ in form, situation and structure, and are accordingly divided into venous, arterio-venous, and capillary. The venous internal pile differs from the external in being covered with mucous membrane instead of integument and having a tendency, from slight irritating causes, to bleed. The arterio-venous pile as described by Hamilton "consists essentially of hypertrophy of folds of mucous membrane surrounding the anal opening, the so-called pillars of Glisson. They have a red, almost vermilion color, elongated form, and contain within them one of the descending parallel branches of the superior hemorrhoidal artery."

Capillary hemorrhoids are small sessile tumors usually situated high in the rectum, exceedingly vascular and in structure consist chiefly of small arterial ramifications and hypertrophied connective tissue.

Symptoms.—The symptoms of hemorrhoids vary with the location, progress of the disease, and size of the tumors. A non-inflamed external pile does not cause much distress—merely a sense of fullness after defecation, with local heat and slight itching. But as the disease increases and the tumor becomes enlarged and inflamed the suffering is often intense. A deep seated, dull, aching, throbbing pain is experienced, radiating from the anus through the perineum into the nates, which is much increased by walking or standing. The spasmodic contraction of the irritated sphincter and levator ani muscles increase the patient's suffering and often produce general systemic disturbances, manifested by malaise, rise in temperature and anorexia. Pain, sensation of foreign body in the rectum, an uneasy feeling and smarting about the anus, increased during defecation and accompanied with or preceded by more or less hemorrhage, are among the first symptoms of internal hemorrhoids. Later the bleeding becomes a more urgent symptom, is more frequent and profuse, sometimes leading to extreme anemia and exhaustion. The pile-tumor protrudes during the expulsion of feces, is caught by the sphincter, becomes inflamed, sometimes strangulated, and the pain is excruciating. Constitutional and sympathetic disturbances ensue, evinced by fever, weak rapid pulse, languor and extreme restlessness. In many instances, too, irritation of the genito-urinary organs, producing frequent desire to void urine and difficulty in micturition with the accompanying tenesmus, add greatly to the patient's sufferings.

ANAL FISTULA.

Quite opposite opinions have been advanced regarding the exact pathology of fistula in ano. It has by some been contended that the fistule originates in an ulcer of the mucous membrane of the rectum, and that the "suppuration in the neighboring textures was subsequent to, and dependent upon this ulceration." In support of this view it has been suggested that the semilunar lacunæ, small valves or pouches, found in the mucous coat of the rectum, in which seeds and other foreign substances might readily find lodgment, may be frequent factors in the causation of ulceration resulting in fistulæ. While, furthermore, it can not be doubted that ulceration of a tubercular focus and traumatism may cause perforation of the rectal wall from within, through which fecal matter may escape, and thus excite suppuration in the surrounding loose areolar tissue, yet the frequency with which fistulæ follow ischio-rectal and other abscesses about the rectum, indicates that the first pathologic manifestation of the disease, in a very large majority of cases, is an "inflammation and suppuration of the cellular tissue external to the bowel, and that the abscess subsequently opens into the gut" (or through the integument or both) "and thus constitutes the fistula." There is perhaps no surgical disease a clear appreciation of the pathology of which is of more importance than is that of fistula in ano. If therefore, periproctic suppuration is, in most instances, the cause and not the effect of the disease, the fact is of much practical significance; for successful preventive measures must rest upon a correct theory of the steps in its formation.

Symptoms.—Anal fistule is not usually accompanied by severe or urgent symptoms. Among the weak, debilitated and strumous who are the most frequent sufferers, other symptoms and conditions often divert attention from the local trouble. During the inflammatory stage, however, there is often much pain and considerable general systemic disturbance. But where the suppurating tension is relieved by free sinuous openings the symptoms subside, and the only inconvenience resulting may be slight tenesmus and pain in defecation, the passage of flatus and pus, if the fistula is complete, and the annoyance of soiled linen from the constant escape of a purulent, fetid, sanguineous discharge.

ANAL FISSURE.

Anal fissure is an affection of much practical importance and interest, not so much on account of its pathologic relations, but because it is often attended with extreme local pain, and frequently gives rise to grave constitutional disturbances. Beginning in an excoriation of the skin and mucous membrane to the extent of exposing some of the nerve filaments of the anus, the reflex irritation and spasm of the sphincter muscles thereby induced, lead to the formation of painful and oftentimes very obstinate ulcers. Fissures are usually of traumatic origin and in the great majority of cases are situated at the posterior commissure of the anal opening. They form suppurating grooves with inflamed indurated edges running parallel with the axis of the bowel, and may extend into the rectum above the sphincter. They are often associated with hemorrhoids, and the external termination of the fissure is frequently found concealed under a small external pile or fold of integument.

Symptoms.—The symptoms of anal fissure and ulcer, both local and constitutional, are characteristic. Among the former are a dull aching pain extending into the loins and thighs, aggravated by an evacuation of the bowel, and continuing with increased severity for several hours after each visit to the closet; morning diarrhea; spasm of the sphincter muscles from irritation of the peripheral nerves causing excruciating pain; and more or less loss of blood or muco-purulent discharge at stool. Continued and annoying irritation of the genito-urinary organs is also a common symptom, sometimes inducing spasmodic stricture of the urethra, frequent micturition, a sense of fullness and tenderness about the prostate, loss of sexual power, and seminal emissions.

The constitutional disturbance, too, is often greater than the pathologic conditions would seem capable of producing. There is a marked perturbation of the nervous system which is seemingly in intimate sympathy with the local affection; and if the disease continues unrelieved, "the countenance becomes pale, anxious and careworn, and the patient's expression is indicative of constant suffering."

TREATMENT OF ANAL FISTULA.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY J. McFADDEN GASTON, M.D.
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PART I.

For a proper understanding of the principles underlying the management of anal fistulæ, it is requisite to present some data connected with the rectum.

Morton and Witherill state that the rectum in its upper and middle portion is derived from the internal and middle layers of the blastodermic membrane, while its lower third with the anus, like the buccal cavity, is formed by the external and middle layers. The rectal veins like the rectal arteries are divided into three sets; superior, middle and inferior. They form two distinct venous systems, the rectal emptying into the portal system, and the anal terminating in the internal iliac.

The throat and rectum have many points of correspondence in their structure, being supplied with circular fibers, which make them the counterparts of each other, by opening and closing their respective orifices. There are two sets of muscular fibers encircling the lower part of the rectum, known as the outer and inner sphincter, by which it is automatically closed except when dilated voluntarily for the release of flatus or the discharge of fecal matter. There is also another distribution of circular contractile muscular fibers at the upper limit of the rectum, which constitutes the division between it and the sigmoid flexure of the colon. This may be appropriately designated the recto-colic sphincter, and forms an effective barrier ordinarily to the descent of the excrement into the rectum. This annular muscle has not received from anatomists or physiologists the consideration which its rôle in the intestinal functions warrants. It is a veritable constriction from muscular contraction by which the colon is normally closed against the descent of the fecal mass into the rectum. When the excrementitious matter reaches the sigmoid flexure of the colon it is deprived of all nutritious properties and after this desiccated mass passes the muscular division between the colon and rectum, and is deposited in the lower reservoir it contains only effete matters.

The fecal deposit acts then as a foreign body, and stimulates this canal to expel the *débris* by the anal orifice, or by remaining there becomes a source of trouble and even of disease. If the indurated mass remains in the rectum for an undue period, it induces more or less local disturbance and extends an erethism to the general system, through the nerve supply to this portion of the organism.

The rectum is a pouch or depository consisting of contractile tissue and capable of great distension under the accumulation of fecal matter within it. While its proper function is that of a temporary reservoir with the property of contraction for the expulsion of its contents, it may fail to perform the office of a waste pipe and become shut off as it were by the sphincters above and below. These annular muscles are provided with somewhat similar means of opening and closing at each extremity of the rectal canal; and being composed of tissues in their walls, which are alike subject to induration and thickening, with constriction of the passage.

Zeigler qualifies proctitis as an inflammation of the rectum, resembling in many points inflammation of the vermiform appendage. The exciting agents are frequently foreign matters and stagnating feces; but disturbance of the circulation in the hemorrhoidal veins may likewise end by inducing inflammatory change in the bowel. When the inflammation and ulceration extend deeply into the tissues of the wall of the bowel, the surrounding connective tissue becomes infiltrated and hypoplastic or breaks down into abscesses containing fetid pus.

Thus it occurs that the rectum becomes a seat of disease and among its disorders fistulas are not uncommon, either as sequelæ of peri-rectal abscesses or resulting from abrasions and ulceration of the inner coat.

Apart from fecal concretions and enteroliths lodged in the rectum and becoming sources of irritation and inflammation to its mucous coat, there are foreign bodies which pass through the alimentary canal and find their way into the rectum to cause trouble in the surrounding structures. Fish bones, spiculæ of chicken bones and other bony fragments have frequently been found in peri-rectal abscesses after having perforated the rectal wall. Very recently I removed a spicula of bone over an inch in length which had become lodged just within the external sphincter, and one extremity had perforated into the mucous membrane of the rectum. This would have ultimately effected an opening through which the fecal matter could have penetrated the tissues and set up a suppuration process. The incautious introduction of a syringe pipe or other solid substances, may also induce abrasions of the mucous membrane of the rectum, which will terminate in ulceration and perforation of the rectal wall.

The attempt to remove hardened fecal matter with a scoop or with the fingers may lead to a like bad result. But there are sources of disorder from injuries inflicted in the parts immediately around the anus, which set up inflammation of the deeper seated structure. Violence of any kind, by a kick, sitting down upon a projection or being thrown upon the pommel of a saddle, may lead to a peri-rectal abscess, which calls for considerable skill in its treatment to abort its termination in a fistulous outlet. The early recognition of such a purulent collection and its discharge by a free incision, with the subsequent use of a drainage tube and light tamponage with antiseptic gauze, are usually attended with a radical cure of such traumatic abscesses. But there will occur cases which resist treatment or which fail to be properly managed that result in fistula.

There is a class of tuberculous abscesses in the peri-rectal tissues which are of strumous origin, and independent of any mechanical injury, that are accompanied by fistula of the most aggravated type. This form calls for constitutional as well as local treatment.

It is not a legitimate inference that the drain of a

fistula upon the adjacent rectal structures has a salutory influence upon tubercular diseases of the lungs. The evidence is conclusive to my mind that the general debility and constitutional irritability, resulting from the constant wear and tear of fistulas involving the tissues around the anus, are in most cases aggravating circumstances in the progress of other diseases and the more effectually they can be cured the better is the result. There was a period when the names of distinguished members of the medical profession were arrayed against operating for fistula in ano when it occurred in a tubercular subject. But the weight of authority is now favorable to operative interference for eliminating the local disorder and arresting the drain upon the system.

Instead of the chronic cure by a slow treatment for fistula in ano, with oft-repeated temporizing applications, in subjects of tubercular disease, it is decidedly preferable to secure the prompt effect of a speedy and radical operation in cutting short the evil.

The openings may occur at distances from the anus varying greatly, both internally and externally. Where there is a sulcus forming a semi-circle around the lower portion of the rectum it is recognized as a horseshoe fistula, and may have the opening in the skin on the opposite side from that in the wall of the bowel.

The usual division of complete and incomplete is based upon the existence of an external and internal opening in the former, and either one or the other in the latter. Those having but one opening are known as blind fistulas and we may have a blind external or a blind internal fistula, as the opening occurs in the skin outside of the anus or in the mucous coat within the anus.

The cases in which the two openings in close proximity to the anus are presented usually involve only the external sphincter, and have the internal orifice between this and the internal sphincter, in the depression which exists in the space between the two muscles. This is accounted for by Allingham in the following manner: "The abscess forming, in most cases just outside the anus, does not burrow deeply but passes close under the external sphincter; it then is prevented from ascending higher up the bowel by the thick band of the internal sphincter, and consequently is turned inward and makes its way through the lax areolar tissue." This explains those cases in which the primary abscess is outside of the rectum; but a large proportion of fistulas have their origin inside, and by perforation of the rectal wall admit the fecal matter which works its way by suppuration out through the skin beyond the border of the anus forming a complete fistula.

When the abscess commences in the ischio-rectal fossa it burrows deeply, according to Allingham, and then most usually passes beneath the internal sphincter and opens, if at all, high up in the rectum. There may be more than one aperture in the rectal wall communicating with different fistulous tracts, leading out through the skin at varying distances from the anus. When the openings occur high up in the wall of the rectum, and the suppurating process extends from these into the surrounding tissue of the buttock, several external orifices may be found in the skin of the hip even at a distance of six or eight inches from the anus. Comparatively few of these cases have been noted in this country, but quite a number of them came under my observation during my sojourn in South America. Some of these extensive fistulas will be referred to in connection with the surgical measures adopted for their relief.

The foregoing pathologic indications have not included a distinct recognition of what constitutes a fistula, and it may be defined as the ulcerated outlet of a suppurating tract through the subcutaneous tissues. This irregular and often tortuous channel is surrounded by a pyogenic membrane, bounded by a fibrinous deposit, which imparts a sense of induration to the touch by palpation. The object of treatment in any form should be the obliteration of this canal and the apertures connected with it, whether internal or external.

PART II.

As a preliminary step toward any measure of treatment for fistula in ano, whatever may be its form, it would be desirable to have the bowels freely evacuated for two successive days and to use an enema of warm soap water during the morning of the day fixed for an operation. After this procedure the patient should be placed upon the side, with the hips projecting over the edge of the bed so that the fistulous opening shall be uppermost, and a speculum introduced into the rectum with a view to open moderately the anus. A syringe with a small beak may now be employed to pass a 50 per cent. solution of the peroxid of hydrogen from the external aperture through the fistulous canal and out at the inner aperture, leaving it to escape through the dilated anus. This should be followed with an injection into the fistula of a mixture of one drachm of the concentrated Lugol's solution with four ounces of warm water, letting it escape by the anus, as in using the other wash. Lastly a stream of sterilized warm water should be passed through the fistulous tract and the patient is ready for whatever operation may be indicated.

Various processes have been employed for the cure of anal fistule, some of which look to the correction of the conditions involving the use of injections into the tract, while others by mechanical devices procure its obliteration, and again the more radical measure of a cutting operation is held to be the most effective treatment. It is evident that different modes of procedure are requisite, according to the nature of the case, and that which is applicable to the superficial complete anal fistule can not be adopted in the deep-seated anal fistule with one or more apertures in the bowel communicating by fistulous tracts with several outlets in the skin at varying distances from the anus.

When there is an external orifice within an inch or less of the margin of the anus, and an internal opening within an inch or less of the aperture of the anus, the knife may be safely employed. A grooved directory being introduced at the external opening is carried gently along the tract of the fistule until it emerges from the internal opening into the lumen of the bowel, when the index finger of the left hand is passed into the anus and up to the end of the directory.

If from any cause the directory is not found protruding it should be guided by the finger into the aperture, and then passing the end of the finger beyond the point of the directory it should be brought outside of

the anus. The tissues lying between the external and internal openings of the fistule are now resting over the directory and entirely exposed to the view of the operator. At this point I have found a departure from the custom of using a curved bistoury to give satisfactory results, and would advise the broad straight bistoury to be placed with its back in the groove of the directory and thrust through this intervening structure, which includes the external sphincter muscle. If the fistulous tract is not located at a right angle to the border of the sphincter, the directory should be forced into a position to make the cut transverse to the fibers of the sphincter muscle.

The next step is scraping out or curetting thoroughly the fistulous tract so as to remove the pyogenic membrane, and thus place the bottom of the wound in a favorable condition for the process of granulation. Packing the line of the fistule from the external to the internal opening with iodoform gauze, and filling up the incision with loose gauze over this, a compress may be secured with a T bandage to keep the dressing in position.

There is usually so much sero-sanguinolent oozing after this operation as to soak the dressing and require re-dressing within twenty-four hours. When fresh dressing with iodoform gauze is thus applied no further change is requisite for three days. Unless a movement of the bowels should take place there can be no object in removing the dressing, but if a fecal evacuation occurs, the parts should be thoroughly washed with carbolized water from a syringe and the dressing re-applied as previously. So soon as the bottom of the incision along the fistulous tract is found to be studded with granulations the packing should be discontinued and the sides of the wound brought in contact to secure union of granulation in all parts.

The practice of former times, in keeping the sides of the incision separated by lint or gauze until the wound fills up with granulations from the bottom is a fruitful source of protracted suffering to the patient and conducive to that loathsome result of inability to retain the feces and intestinal gases. If the curetting is done efficiently at the outset and the packing applied properly in the bottom of the wound for one week the granulating process ought to be so developed in this time as to warrant the closure of the incision. By the use of firm compresses on either side, held in place by strips of adhesive plaster or bandages, an operation of this kind should not require the attention of the surgeon more than two weeks. The union secured in this way between the divided parts of the sphincter obviates all inconvenience afterwards from fecal incontinence.

The attempt to dissect out the tract, when a fistule is laid open, has not been attended with results which should encourage the immediate closure of the incision after an operation and hence need not be dwelt upon here.

In regard to those cases in which the internal opening of the fistule is found above the internal sphincter, but within two inches of the anal orifice, while the external opening is something over an inch from the margin of the anus, the knife may still be employed with safety. But in view of the difficulty or even impracticability of turning the point of a grooved directory out at the anus, the process may be modified by introducing a concavo-convex wooden guard into the rectum to receive and support the point of the directory when it emerges from the internal opening of the fistule.

An assistant should hold the directory firmly while the operator secures the guard and makes the incision with the broad straight bistoury, by thrusting it along the groove of the directory until the guard is reached and then cutting inward so as to divide all the intervening tissues. The subsequent management of the case corresponds very much to that above described, except that the packing must be carried higher up in the rectum to reach the end of the incision.

In this class of cases the elastic ligature has been employed with satisfactory results by some operators. It certainly has at least the recommendation of lessening the liability to hemorrhage which attends a cutting operation that extends above the internal sphincter. There is a decided advantage in using the elastic ligature instead of silk or other material which only cuts through a limited portion of the inclosed tissue, as the latter must be tightened from time to time, whereas the former continues the constriction until all the tissue is divided. In either case, however, there must be considerable delay in the process of cutting through the structures involved; and there is suppuration continuously, not only along the original fistulous tract, but from the entire surface left behind the ligature as it cuts its way out. Under these unfavorable conditions it is very desirable to adopt another procedure which may accomplish the end in view more expeditiously, without hemorrhage and without suppuration. All these requirements are fulfilled completely by employing the chain écraseur. This is suited not alone to the fistules having an external and an internal opening within an inch to two inches from the anus, but to those opening high up in the rectum and at a distance of several inches outside of the anus, through one or a number of apertures in the skin of the buttock. Having treated some cases of deep-seated extensive fistule in ano by this process during my sojourn in South America, which were reported in the *American Journal of the Medical Sciences* of July, 1881, I will present a few of the points recorded in that paper, to which members are referred:

If the source of the fistula is high up in the rectum, the route of the discharge may be in the direction of the sacrum or through the muscular fibers of the gluteus, and there may be several lines of communication with the surface. When the tract penetrates to such a depth as to cause apprehension of hemorrhage by cutting with the knife, the tissues may be divided without any risk by the chain of the écraseur of Chassaignac. The essential conditions which indicated this operation have been observed in four cases of extensive fistula in ano.

The internal opening in each case was high up in the rectum, and the fistula extended from this aperture deeply into the surrounding tissues, so that the line of communication between the internal orifice and the external outlet of these fistules exceeded six inches in length, involving the structures on a large scale.

As the space allowed for this paper does not admit of details and the record of the treatment with two chains at the same time is given in the report of the last case, it may be quoted verbatim from the *Journal*. Chloroform anesthesia was used in all cases: "Case 4 had two deep fistulas, whose external outlets were

nearly equi-distant from the junction of the sacrum and coccyx on either side, having each a communication with an opening about midway up the rectum. The channels being tortuous could not be traversed by a metallic probe or director, yet they were explored by a flexible bougie, to which the chain of the écraseur was attached, and thus loops were thrown around the intervening parts. Two instruments were used so as to encircle the tissues on either side and divide them at the same time. As the chains included a portion of the buttock containing no vessels that could yield any considerable amount of blood, the tightening was done rather too fast, and as a consequence there was some sanguineous oozing from the divided surfaces of the muscles. This, however, ceased upon the application of a strong aqueous solution of phenic acid, which has proved in my hands an effective hemostatic, even when small arterial twigs are divided by the knife.

"The usual dressing of fine strips of old linen saturated with carbolized oil was kept up for some weeks, and the cure was completed within two months, so that the negress went about her duties on the farm."

The most remarkable feature in connection with these extensive divisions of the deep-seated fistulas, involving the cellular tissue with the muscular fibers surrounding the rectum, is the comparatively slight effect produced upon the general system. There has been little febrile excitement and the restorative process has progressed satisfactorily after all these heroic operations.

TREATMENT OF ANAL FISTULA.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY GEORGE B. SOMERS, M.D.
SAN FRANCISCO, CAL.

In a very interesting article, occurring in the *New York Medical Journal*, on the history of anal fistula, Bodenhamer shows that this disease was well known and well treated in very ancient times. He says, in fact, that the ancients "possessed all the indications in the treatment of this disease, as well as the numerous measures and methods of putting them into execution. They had incision and excision with the bistoury; they had the ligature: and they also had cauterization in all its many forms; indeed, we are indebted to them for almost all we know upon the subject of anal fistula."

In the absence then of any particularly new ideas concerning this subject, there would appear to be no sufficient reason for taking it up. But in the face of the frequent failures attending its treatment, we are often driven to examine the subject afresh, in order to reassure ourselves concerning the ground principles of treatment.

Simple anal fistula is generally considered one of the easiest things in surgery to deal with; but the fact is that the majority of fistulæ are not simple. There are two factors complicating nearly every case, which must be understood and borne in mind in the treatment of the disease. These are the cicatricial walls of the canal and the frequent existence of collateral sinuses.

Mathews gives it as his opinion, that fistula in ano is invariably preceded by or is the result of an abscess. The importance attached to this proposition is that the character of the abscess influences the character of the fistula resulting from it. Every abscess whether due to pyogenic or tubercular microörganisms, is lined by a new-formed membrane; and every fistula resulting from an abscess is lined by a similar membrane. In the pyogenic abscess and fistula the wall consists, in the first stages, of simple granulation tissue; but if the abscess lasts any length of time, the granulations gradually organize into tough, resisting cicatricial tissue, which forms an impermeable lining and really acts as a protective to the healthy tissues behind. In tubercular abscess and fistula, the lining membrane consists of fibrin or cicatricial tissue, which has been softened by the infiltration of numerous degenerating tubercles. This tubercular membrane is of a grayish color and may be easily stripped off in fragments by the finger or curette.

With such membranes present within a fistula, all efforts at healing are retarded; for the membrane of the first kind, through its thick tough walls, effectually suppresses granulations, and the membrane of the second kind, through the presence of the bacilli and degenerating tubercles, constantly dissolves away the granulations that may form. Consequently, in order to cure a fistula, the necessity of getting rid of its lining membrane is obvious.

The second factor to be considered in reference to any mode of treatment, is the likelihood of a collateral sinus, diverticulum, or pocket being present. Such a sinus would present the same characteristics as the main canal and should receive the same treatment. Otherwise the lining membrane will, in the majority of cases, prevent healing.

In considering what course to pursue in treating a fistula, the above mentioned conditions must guide the choice. The methods commonly adopted are four in number. They are by injection, by ligature, by the fistulotome, and by the knife. The first three are obviously not radical modes of treatment, and probably would be resorted to by the surgeon but rarely, were his judgment influenced solely by the local indications.

The methods by injection and ligature are well known and need no special consideration.

Mathews' fistulotome is an ingenious instrument and has been used with success by its inventor in a number of appropriate cases. Dr. Mathews himself, however, distinctly states that the instrument can only be deemed an expedient to be used when the patient refuses to undergo a radical operation. The instrument contains two concealed blades which, after insertion into the bottom of the fistula, may be disclosed and caused to cut through the walls of the fistula while being withdrawn. As the cutting is subcutaneous there is little or no pain. Mathews precedes the device by enlarging the whole course of the canal with laminaria tents. The method cures by cutting through the opposite cicatricial walls of the fistula, which allows granulations to spring up and fill the canal.

It is generally acknowledged that the most rational method of treating fistula in ano is by the knife; the reason being that by laying open the canal completely, the whole of its surface may be treated and nothing overlooked. But the dangers of cutting through the sphincter, no matter how carefully done, are real and the procedure is often followed by bad results. Accordingly, any reasonable attempt to

avoid this danger by less radical means than the knife is justifiable. Tuttle believes that in the majority of cases the sphincter should not be severed. He formulates his ideas as follows: "Convert the fistula into a cone-shaped cavity with its external opening for a base; scrape it out thoroughly; cauterize the surface and paralyze temporarily the sphincters and gut as high up as the highest point of the fistula by stretching." He believes that there is no excuse for converting a blind external fistula into a complete fistula until after this method has been given a fair trial. In blind internal fistulæ, however, his practice is to convert them into complete, by making an external opening, and then converting the canal into a cone-shaped cavity. Where practicable Tuttle's operation should always receive a fair trial in order to avoid the dangers of causing incontinence.

In the operation by the knife the consensus of authority agrees that the main steps of the operation should be somewhat as follows: 1, the insertion of a grooved director to the bottom of the canal, and even pushing it through into the bowel if the inner opening be not readily found; 2, the end of the director protruding into the rectum is brought out through the anus; 3, the tissues lying on the director are incised; 4, the membranes lining the canal are scraped out or dissected away, and any pockets or collateral diverticula are treated in like manner.

It goes without saying that strict cleanliness and antiseptics are in order. In addition, however, there are several factors, collateral to the above mentioned steps which will bear discussion.

Manley states that the sphincter ani is the key to the treatment of all ano-rectal maladies, and shows that nearly all rectal affections are favorably influenced by dilatation. In fistula the sedative effect of dilating the sphincter is of special value, for as the contractile tissues are put at rest, healing is allowed to go on undisturbed. Accordingly, thorough dilatation of the sphincter should precede the incision. Again, the external sphincter, which controls the escape of gases from the rectum, is generally completely severed in the radical operations; for the internal opening of complete fistulæ is usually found between the external and internal sphincters. The importance, therefore, of insuring its union is obvious. Experience teaches two facts with reference to cutting the sphincter, namely: That the muscular fibers unite better if they are cut at right angles to their course, and secondly that if the sphincter be divided in more than one place, incontinence will very likely follow. So much for the sphincter.

In tuberculous fistulæ the lining wall can not as a rule be cut out owing to its soft nature. The curette must be thoroughly used. The question of operating at all in a tubercular subject depends entirely on the physical condition. If the patient can stand the operation he will be better for it.

In reference to the inner opening of a fistula Gerster says: "When the internal orifice can not be found, or a burrow extends upward beyond it, the grooved director should be inserted as high up as the cavity or sinus permits, and thence should be thrust through the mucous membrane into the gut." The procedure quoted is logical, and is the modern practice. Formerly, entirely too much stress was laid on finding the inner opening, under the superstition that a fistula could not be cured unless the bowel opening were found.

In fistulæ that have very little tissue intervening between the canal and the rectum, it will be found after the incision is made, that the edges of the wound are thin and have a tendency to become inverted. In order to prevent inversion these edges should be quite freely trimmed off.

As a final proposition with reference to completing the radical operation for fistula, the question of the use of sutures in appropriate cases comes up. Suturing the raw surfaces in order to procure primary union was probably first thoroughly tried by Lange. The method has the further approval of Gerster, Mathews and Jenks. In suitable cases it undoubtedly hastens the cure. Lange and Gerster unite the walls by buried catgut. The sutures do not include the mucous membrane, but are inserted close to the edge on one side and brought out in the same manner on the opposite side. The object of burying the sutures is to prevent infection from fecal contents. The edges of the mucous membrane may be further drawn together where necessary. The external or cutaneous part of the wound should be only loosely sutured to allow for drainage.

AFTERNOON SESSION, JUNE 7.

The following papers were read by title: "The Pathology and Symptomatology of Hemorrhoids, Anal Fistula and Anal Fissure," by Dr. J. M. Mathews, Louisville, Ky.; "Treatment of Hemorrhoids," Dr. Charles B. Kelsey, New York; "Treatment of Anal Fistulæ," Dr. J. McF. Gaston, Atlanta, Ga.; Treatment of Anal Fissure," Dr. Lewis H. Adler, Jr., Philadelphia, Pa.

DR. DAVID POWELL, Marysville, Cal., read a paper on the "Pathology and Symptomatology of Hemorrhoids, Anal Fistula and Anal Fissure."

DR. G. B. SOMERS, San Francisco, Cal., read a paper on "Anal Fistula."

DR. THOMAS W. HUNTINGDON, Sacramento, Cal., read a paper on "Treatment of Anal Fissure."

DISCUSSION.

DR. GEORGE G. SHIELS, San Francisco, Cal.—I came in time to hear the paper of Dr. Somers, and I want to point out the fact that he uses the term membrane, pyogenic membrane, in connection with anal fistula. New the sooner we condemn the use of this term the better. There is no membrane in fistule; there is no such thing as a pyogenic membrane. It is not a membrane in any sense of the term. It does not secrete pus, and I think it is wrong to use it. It is simply going backward to use it, and no man should allow himself to drift into the use of the term, pyogenic membrane. I want individually to condemn that very strongly.

DR. SOMERS—What would you call it?

DR. SHIELS—A mass of unhealthy granulation due to either one or the other condition. The point that I want to make is this, that a membrane is a secreting structure, it is a physiologic structure. You do not find membranes in the physiologic condition like fistule. It is merely the result of a chronic unhealthy condition leading to the formation of unhealthy granulation tissue. The term, pyogenic membrane, has passed ont of the vocabulary of the scientific surgeon and is only retained in some of the older descriptive books. And I think it very wrong to use it.

DR. JULIUS ROSENSTIRN, San Francisco, Cal.—I would like to make a few remarks on the paper of Dr. Somers regarding the treatment of fistule. I believe that the underlying and emphasizing thought in connection with the treatment of fistula is that it ought to be complete and not left incomplete. As a fact the membrane, as Dr. Somers called it, or rather as I find with Dr. Shiels in condemning the word, the granulations of the tissue ought to be excised and the wound united with buried catgut sutures, and afterward silkworm gut tissues to unite the mucous membrane in the rectum. I believe that that is the only surgical method of treating fistula in ano. And I do believe that modern surgeons can not do any better than make a radical method of dealing with long standing wounds of that character and long standing fistula in ano, and they should not be satisfied with palliative measures that certainly do

no credit to the operative surgeon and do not relieve his patient very much.

DR. G. B. SOMERS, San Francisco, Cal.—In reference to the term, pyogenic membrane, I do not think that any of us understand it in the old meaning of the term. The old meaning of pyogenic membrane was the secreting membrane that secreted pyogenic matter, the source of pus. In the absence of any better term, in the absence of a substitute for it, that is for the term describing the lining of the canal, it appears to me that this appellation may be retained. I notice that in condemning the use of the word, membrane, the same word was used by the party in describing the structure.

Now in reference to cutting through the sphincter, the statistics, if statistics may be brought into the discussion, show that more than half of the operations for anal fistule in hospital practice result in failure, and it is for this reason that such men as Tuttle have been very anxious about cutting through the external sphincter and have attempted to devise some means of getting around this part of the operation. And in appropriate cases where fistula—say an external fistula may be formed into a conical-shaped cavity it appears the best method to pursue is make the external opening as large as possible, to scrape out the canal, and allow the cavity to granulate from the body.

DR. PRATT, Oakland, Cal.—If Dr. Huntingdon is present I would like to ask him a question. I notice that he emphasized especially the necessity of thorough dilatation. He said that it would be necessary to dilate several times. I want to know if he meant exactly what he said, or if he meant to say that we would have to dilate several times at that time, or several times on several different occasions. I did not understand his meaning.

DR. HUNTINGDON—What I intended to say and what I think I did say was to this effect, that if the method by dilatation simply was the resort, that in the large majority of cases several attempts at dilatation will be required for the relief of anal fissure. However, it is well known that they have been cured by a single dilatation, and occasionally I believe by a simple dilatation of the anal fissure has a cure been effected. That has occurred in my own experience, and as a rule, with the deep-seated affairs which we deal with more ordinarily than others, I believe that if dilatation be the method of treatment we shall have to dilate more than once; that is, we shall have to make more than one dilatation, and perhaps half a dozen.

DR. KUTZ, California—The statement was made here a little while ago that the best method of treatment was the true surgical proceeding of suture, after laying a fistula open. I hope the gentleman has not reference to all cases. If he practiced in the country where I practice, I think he would let the majority of them alone. I think all tuberculous cases should not be sewed up, for they will not unite. I have tried that in earlier days, and I have corrected my measures. I sew up none of the tuberculous cases. They never will unite. Other fistulas, non-tuberculous fistulas, if divided thoroughly, may be sewed up, and with excellent results, but tuberculous may be treated openly, by packing with iodoform gauze or some of the other antiseptic gauzes.

DR. JULIUS ROSENSTIRN, San Francisco, Cal., read a paper, omitted at the morning session, on "Treatment of Stricture of the Urethra."

DR. THOMAS, Pennsylvania—There are some things in the paper with which I am well pleased, and there are some others to which I take exception. In regard to the numbers of the sounds used in the treatment of the urethra, I think the French numbers should always be used, because the American numbers, as well as the English, are arbitrary; they mean nothing, while the French numbers always mean exactly what they enumerate.

The gentleman spoke of the use of cocain on the urethra before the use of the sound. My experience shows that the use of cocain before the use of the sound in the urethra is of very little value. Where you wish to make an incision in the mucous membrane of the urethra, cocain is then a very serviceable and useful medicament, for this reason, that in excising the mucous membrane the cocain has benumbed the sensibility, and you can cut the mucous membrane without producing pain; but in the introduction of the sound, the sensation of the sound goes far beyond the mucous membrane, and you will derive no benefit from the use of cocain in the introduction of the sound. I have observed this time and time again, so that I have discontinued the use of cocain before the use of the sound, which is always used before incising.

The gentleman is not apparently in favor of internal urethrotomy. I agree with him, however, in the view that you can attain this by continual dilatation, and more particularly so if the stricture is of small caliber. My experience is that you can gain space for a certain distance much better, that when you get up near the circumference of the urethra your sound does not have as much effect in reducing it as it does early in the structure, for this reason, that you simply press that tissue in the sphincter, and hence you do not get the absorbing effect of the sound in these strictures of smaller caliber that you do in the case of the larger strictures. And again there are strictures that will not absorb, that may pass a sound to-day, and in three days you may fail to pass the sound which you first passed. And we can keep that up for weeks, and if we so treat our patient we are doing him no good. Now in these cases internal urethrotomy is absolutely necessary, and I do not think you can cure the patient in any other way.

With regard to divulsion of strictures of the urethra, the general opinion of the profession is against divulsion in stricture of the urethra. I never use divulsion in the anterior urethra myself, but I do wish to express a favorable opinion with regard to divulsion in certain cases, and I do this from experience. If we can relieve a man of trouble of that kind as safely, as surely by divulsion as we can by cutting, then in those cases why not divulge? I am sure that the consensus of opinion of urethral surgeons to-day is that divulsion is not a safe operation. But it is a safe operation if carefully done, and we could do it just as satisfactorily as cutting.

With regard to electrolysis, some few years ago I wrote two or three articles upon that subject for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, because I had not entered into the subject of electrolysis with a good deal of enthusiasm, and I went into it by reading the articles of those who pretended to treat in that way. I experimented for one year upon the treatment of strictures by electrolysis. And as I have said I can not see the philosophy of treating the strictures in the deeper portions of the body and curing them, when you can not cure them on the surface, the same with fibroid tumors on the deep parts of the body, when you can not cure them on the surface, So I think that in treating strictures by electrolysis the effect is absolutely *nil*.

DR. THOMAS W. HUNTINGDON, Sacramento, Cal.—I have been accustomed for a long time to state to my patient and to his friends that I was thoroughly convinced no operation was trivial to the patient. I believe we surgeons should add to that, that no operation should be considered trivial to the surgeon. Following out this idea, and applying it to the subject which has been introduced to us this afternoon, I am just as certain that no procedure which involves a dealing with the male urethra is ever trivial, I care not what it be. We have records of deaths from the passage of the catheter. We have records of very serious trouble from the introduction of the ordinary steel sound. There is no operation which can be regarded as perfectly safe when you come to deal with the male urethra. I have been, and am yet an ardent advocate of internal urethrotomy under many conditions, not under all, and I certainly hope that it will not go out from this meeting and from this Section as its opinion, that internal urethrotomy has lost its function and has passed into oblivion. I believe that as long as any of us live, as long as surgeons operate at all; internal urethrotomy will be a resort of every surgeon, or many surgeons who are doing excellent and efficient service.

The question arises in dealing with a stricture, Why are we called upon to deal with it at all? And I think that the answer may be divided into two parts, or it may be dealt with under two heads: 1, to relieve the retention of the urine; 2, to relieve a nasty, persistent and almost incorrigible discharge. I think that covers the ground mainly of the necessity for dealing with the male urethra under those conditions. It goes without saying that where there is retention with a minimized stricture that something radical, something immediate is the requirement, and under those circumstances I should certainly have no particular choice as to the method of immediate relief from the patient. If it can be obtained by gradual dilatation, dilatation which is done in such a manner as to render efficient service within a comparatively short time, I should certainly have no objection to that method; but where we have a minimized stricture, a stricture of small caliber which has once caused retention of the urine in a patient of medium age, I believe that just so sure as we deal with it otherwise than by very radical methods we shall have a return. And I mean by very radical methods, either persistent, long-continued dila-

tation by sounds or internal urethrotomy. I say nothing of divulsion because I do not practice it, and I can not speak with any authority upon that subject. I should in these cases regard myself as subject to rules of gradual dilatation or immediate incision, and I chose the latter. I chose it for this reason, that the stricture once thoroughly incised, then placed upon stretch, watched for a period of from ten days to two or three months succeeding that operation, can be placed in a condition where it will probably never become a narrow stricture again. I do not wish to advance the doctrine that cutting a stricture is a cure absolutely, but it places it in better condition to be handled by the sound.

In regard to the second cause for the use of treatment in this diseased condition with continuous diseases, I have found repeatedly that where we have a stricture of comparatively large caliber, a stricture that may readily admit from 18 to 22 of the French sound will maintain obstinately a discharge when it has been dilated up to a 32 or 33 French measurement, and I find that it is in many cases absolutely essential to do something else than gradual dilating; that these cases are amenable to the cutting process. I have cured quite a number of cases; I believe I have a record of sixty odd cases of internal urethrotomy, and they have proved almost without exception exceedingly satisfactory.

Dr. Thomas, Washington—I was taught only a few years ago that it was never wise to pass the sound into the bladder when sounding the urethra, as Dr. Rosenstirn said in his article. About a year ago a young man consulted me with stricture in the anus and I used Post's (?) method, and followed it by dilatation until I could pass a French sound. I kept that up for several months, until I was sure I had made a permanent cure and told the young man so. Lately I was called to treat the same man for appendicitis, and I found that the stricture was there yet and in the shape that a No. 9 catheter will not pass through. I mention this to show, in deep strictures the necessity of being sure that your treatment is complete.

Dr. W. T. Dodge, Mich.—I wish to say that my experience has been so satisfactory in internal dilating urethrotomy that for the past five years I have used no other methods. I have seen more severe reaction follow the passage of the sound than I have ever seen follow the use of internal urethrotomy. In the same patients I have on first examination passed a sound and had hard chills, fever and very severe symptoms follow in a few days. I have done internal urethrotomy, and no reaction has occurred. After urethrotomy the sound should be passed, the patient should be furnished with the sound, and he should be expected to use it. If the surgeon expects to effect a permanent cure by his operation of urethrotomy and does not give his patient proper instructions as to the passage of sounds thereafter he will meet with disappointments, for these strictures will return. But if the proper directions are given for the use of the sound and they are properly carried out it is impossible for a stricture to return. The sound should be passed at least once a week, and the patient to be instructed to pass it at intervals of a month for the first year, and always occasionally to pass a sound and be sure that the constriction is not returning. In strictures of the deep urethra I have used divulsion with considerable satisfaction. I have been so well satisfied that I hesitate to make use of any of the old methods of gradual dilatation, and I have never experimented with the electrical treatment.

ADDRESS.

THE ADDRESS OF WELCOME

AT THE GRADUATING EXERCISES OF THE FOURTEENTH ANNIVERSARY OF THE COLLEGE OF PHYSICIANS AND SURGEONS, BOSTON, MASS., JUNE 20, 1894.

BY AUGUSTUS P. CLARKE, A.M., M.D., Dean.

It now becomes my pleasant duty to extend, in behalf of the College of Physicians and Surgeons of Boston, a hearty welcome to all who have come here to witness the graduating exercises of the class of 1894.

It is upward of fourteen years since this College was founded and took up the work of its noble mission in thus offering to men and to women, alike, opportunities of pursuing a regular and systematic course of practical training in the science and art of medicine and surgery which had gradually been developing, and which have come as a priceless heritage from the great masters of this beneficent profession adorning the ages and generations preceding us.

Our ever accumulating wealth and increasing population, our closer intimacy in the varied relations of life and our adoption or employment of so many inventions have tended to multiply in no small measure, dangers to life and limb and to scatter broadcast the seeds or germs of disease that are everywhere prolific in the earth, in the water, and in the air round about us.

That we should have at hand, to employ with the greatest dispatch, the means and remedies for overcoming these diverse factors adverse to our health and to our soundness of being must be obvious to all. So far as our own school is concerned, it gives me much pleasure to say that it is fulfilling its share of the work intrusted to its charge and that it is giving promise of a brilliant future.

Co-education in the profession of medicine is no longer in its elementary stage, but its trial has long since demonstrated the fact that its adoption can be of the greatest advantage to both sexes, and that the percentage of attainment by the female student, even in the most difficult branches to master, is often indicative of great industry and of original powers for observation.

The corporate capacity of our College is strong; the members of its Faculty are learned, able and earnest; they will compare favorably with those in schools of the best appointment. We are also fortunate in having on our list of active professors the names of lady physicians and surgeons of exceptional ability and reputation. Furnished with such equipments who will say that we shall not continue our service?

There is no more noble profession than ours; the student can be engaged in no higher mission than that of preparing himself for rendering relief to his fellow creatures. To whatever branch of the healing art he may turn his attention he will there find an abundance of evidence that the ground has already been pressed by the footsteps of the great and good.

There is always an innate satisfaction and exceeding joy, or I might rather add there is an immediate fullness of fruition that flows into one's whole being when a real attempt is made to scan the heights and depths of research and achievement accomplished by the men of genius who have gone before. The wise sayings of Socrates, as portrayed by his pupil the immortal Plato, are no more replete with life-giving principle than are the aphorisms of his contemporary, Hippocrates, the father of medicine. The rapturous perorations of Cicero when addressed to our understanding and common needs bespeak no more helpful strains than do the writings of the good physicians, Celsus and Galen. Newton's discovery relating to the celestial spheres and Bacon's philosophy by induction and the demonstrations of the whole galaxy of the lesser lights in their work in this direction, though most important as mile stones set to mark the onward progress of human thought, have not been more efficient in ministering to our necessities than has been the discovery of the circulation

of the blood by the celebrated Dr. Harvey, and have been by common consent of infinitely less moment in intrinsic value than has been the discovery of the anesthetic properties of ether as first demonstrated by Dr. Morton in this our metropolis of New England.

The medical student in advancing upon his professional studies, will have for contemplation the mighty achievements left as abiding witnesses of the zeal and industry of such savants as Eustachius, Vesalius, Malpighi, Boerhaave, Albinus, and Williams and John Hunter, and a host of others, to say nothing of the great workers who have given possibility to results not heretofore obtained in obstetrics, gynecology and abdominal surgery.

I refer to the invaluable contributions by McDowell, of Kentucky; by Sims, by Emmet, by Peaslee, by Dunlap, all in our own country, and to the deductions and demonstrations of M. Lemaire and of M. Pasteur, of Paris, and to those of the elder Simpson and of Lister, of Scotland, and to the long list of contributors who have worked on German soil and whose names will ever shine in more resplendent glory than will the names of the greatest European kings.

I should not detain you longer with such recital and with further remarks of my own; but my official position prompts me to extend to you again a most cordial welcome, and to add to this our warmest salutation the following German sentiment which I trust may not be deemed inappropriate:

"Möge jeder Tag mehr dazu beitragen, volles Verständness und Wahre Freundschaft, unter uns allen zu fördern." (May each day be helpful in advancing us to a full understanding, and in establishing among us true friendship.)

SOCIETY PROCEEDINGS.

American Surgical Association.

Annual Meeting held in Columbian University Building, Washington, D. C.

FIRST DAY—TUESDAY.

The Asssociation was called to order by the President, DR. J. EWING MEARS, of Philadelphia, who delivered the President's Address. In this was considered only matters of interest to the Fellows of the Association, referring to the previous work of the Association, and the methods of best carrying on the work of the society.

The Secretary, DR. J. R. WEIST, on behalf of the President presented the Association with a gavel which had been made from a portion of the office chair of Professor S. D. Gross, the founder of the Association. This was accepted with the thanks of the Association.

The first paper was entitled,

THE SURGICAL TREATMENT OF EMPYEMA,

by DR. JOHN ASHHURST, JR., of Philadelphia.

The following summary was presented:

1. No operation is justifiable unless the presence of pus is certain; unless thorough treatment by medicinal agents, blisters, etc., has failed; or unless the symptoms, dyspnea, etc., are so urgent as to demand immediate relief.

2. The first operation should consist of simple aspiration, with antiseptic precautions.

3. When the fluid has partially re-accumulated, as it almost certainly will do, if purulent, incision and drainage should be practiced.

4. Drainage is best effected by making two openings, one at the lowest point, and carrying a large drainage tube through the cavity from one opening to the other.

5. Drainage should be supplemented by washing out the cavity with mild antiseptic fluids; when the lung has expanded and the discharge has nearly ceased, the tube should be shortened, the upper opening being allowed to heal, and the tube then being gradually withdrawn through the lower opening.

6. When the lung is so bound down by adhesions that it can not expand, resection of two or more ribs should be practiced (Estlander's operation, so-called) in order to allow collapse of the chest wall and to promote healing by bringing the costal and visceral layers of the pleura into contact.

7. The more extensive operations of Schede and Tillmans, while probably justifiable in exceptional cases, are not to be recommended for general employment.

DR. CHAS. B. NANCREDE of Ann Arbor—did not see the advisability in cases where pus was shown to be present by aspiration, of limiting the treatment to this operation. It is held that in a few cases this will be followed by cure, but he had never seen such a case. Where pus is present he preferred to immediately provide for its permanent evacuation. He called attention to the danger of the drainage tube becoming occluded by the pressure of the ribs and he believed that in empyema of long standing some form of excision of the ribs should be employed.

In irrigation, if the pus is not too much contaminated, sterilized water is sufficient, but if necessary an efficient antiseptic solution may be used and if there is fear of absorption, the chest can afterwards be flushed with sterilized water.

If provision is made for the free escape of pus, he had seen no necessity for the removal of large segments of ribs.

DR. T. F. PREWITT, St. Louis—thought that the rule that no operation is justifiable unless the presence of pus is certain, needed modification. As a rule, we can now determine only that fluid is present and can not be sure that it is pus. He thought it advisable to aspirate even when serous fluid is present. If thorough antisepsis is maintained this can do no harm. He had never seen it result in the formation of pus, and this method greatly shortens the duration of the disease. In empyema in children he had seen several recoveries follow aspiration but never in adults. In children the pus does not seem to possess that thick clotting character so common in adults, and which requires a free opening. In empyema in adults he invariably resects a rib, sometimes two ribs.

Attention was called to the great necessity of caution in the administration of anesthetics in cases of this affection.

As to washing out the cavity, he always does that, using a weak solution of bichlorid of mercury.

DR. DEFOREST WILLARD, Philadelphia—It seemed to him that the whole question was one of thorough drainage of an abscess cavity. Whether or not the ribs should be excised is to be determined by the question of securing free drainage. In children the ribs are so close together that removal of a portion of ribs is usually required. In the early treatment he favored the use of a clean aspirator rather than to compel nature to cause the absorption of a large quantity of fluid. Such operation does no harm and saves several weeks in time. He believed that washing as a routine measure did more harm than good. If the pus is decomposing it indicates that freer drainage is needed. If strong antiseptic solutions are employed there is danger of renewed inflammation.

DR. JOHN E. OWENS, Chicago—called attention to the necessity when evacuating pus from the chest, or washing out the pleural cavity, of changing the position of the patient during the process in order that all the pus may be removed.

DR. CHRISTIAN FENGER, Chicago—considered that there were certain cases in which Schede's operation was required. Its place was after milder measures such as incision, drainage, and Estlander's operation. He reported a successful case where this operation was performed after other measures had been resorted to during seven years.

DR. ROSWELL PARK, Buffalo, N. Y.—thought that the treatment of empyema should be based upon the same principles as are applicable to other abscesses. In acute cases where we have to deal with streptococcus and staphylococcus forms of suppuration, it may be sufficient in a few instances to simply aspirate. A large proportion of cases of empyema, however, are essentially cold abscesses—tubercular abscesses. In these cases free incision, free drainage and excision of a rib is required. In certain cases he had resorted to scraping with the sharp spoon, and in some had cauterized the diseased surface with 50 per cent. solution of chlorid of zinc. He reported several cases where death would have occurred had it not been for some such radical operation.

DR. W. H. CARMALT, of New Haven, Conn.—asked how far it was justifiable to go in the way of resection of ribs in these cases? He reported a recent case in which he had

removed portions of five ribs, the longest piece exsected being four and one-half inches. In these cases, it is necessary to remove enough of the chest wall to permit of obliteration of the cavity. He had also used the sharp spoon in order to secure a fresh surface.

DR. M. H. RICHARDSON, of Boston, Mass.—said that the questions that arose in the treatment of empyema were different from those in ordinary abscess, for in the former condition we have an abscess with rigid walls. With regard to drainage, he had used double tubes provided with valve, but considered them inapplicable and liable to cause increased trouble, for when air or pus is forced out through the tubes by coughing, a vacuum is established and the valve is held against the chest wall, preventing drainage. He believed that Estlander's operation was applicable only to certain forms of cavity and that there were certain cases where the cavity involves a large portion of the thorax, in which the operation of Schede is the only one applicable after a failure of Estlander's operation.

DR. STEPHEN F. WEEKS, of Portland, Me.—thought that the rule of Dr. Ashhurst to aspirate, especially in children, was a good one. Sometimes that will result in cure. The tuberculous cavity is to be treated differently than the cavity where this condition does not exist. Thorough drainage is sufficient in many cases. He called especial attention to drainage by packing the cavity with sterilized gauze. In twenty-four hours he removes the gauze and washes out the cavity.

DR. L. MCLANE TIFFANY, of Baltimore, Md.—considered that the treatment of acute empyema was of more importance than that of the chronic form, as it was the more common. The most important point as bearing upon treatment and prognosis is the character of the pus and its bacterial cause. The reason that the child's empyema often yields to aspiration is that in many of these cases the pus is simply a pure culture of the pneumococcus. In the adult we rarely have the pneumococcus form. Here we have a mixed infection. If the empyema is of the amœbic form the patient dies. If empyema is due to the streptococcus, the odor is offensive and the cavity needs to be carefully washed out. If empyema is due to the staphylococcus washing out is not required. When there is time he prefers to withdraw some of the fluid with the hypodermic syringe and have it submitted to bacteriologic examination.

While he uses ether in general work, in these cases he prefers the use of a few whiffs of chloroform, which appears in these cases to have a peculiarly happy effect. Only a very small quantity is employed.

The employment of respiratory gymnastics is of much benefit in favoring the expansion of the contracted lung.

DR. JAMES MCFADDEN GASTON, of Atlanta, Ga.—referred to the natural tendency for the empyemic cavity to open spontaneously in the anterior part of the chest. He reported two cases in which this spontaneous opening had occurred, followed by recovery.

DR. W. W. KEEN, of Philadelphia, read a paper entitled:

AMPUTATION OF THE ENTIRE UPPER EXTREMITY (INCLUDING THE SCAPULA AND CLAVICLE) AND OF THE ARM AT THE SHOULDER-JOINT, WITH ESPECIAL REFERENCE TO METHODS OF CONTROLLING HEMORRHAGE; WITH THE REPORT OF ONE CASE OF THE FORMER AMPUTATION AND FOUR OF THE LATTER.

In this paper were considered: 1, those amputations which allow of simple disarticulation at the shoulder-joint itself; 2, those cases in which the axilla is invaded, yet to such an extent as to allow of its being thoroughly cleaned out, followed by amputation at the shoulder; and 3, those in which removal of the entire upper extremity including the scapula and clavicle is required.

Simple amputation at the shoulder-joint: Here the control of hemorrhage is the key to the situation. The methods for the prevention of hemorrhage are first, those applicable to the subclavian vessels, and second those applicable to the axillary. Most text-books recommend compression of the subclavian by the thumb or well-padded key. Dr. Aldis has modified this method by substituting a stick eighteen inches in length with a pad of sterilized gauze at its extremity. This obviates the danger of slipping and can be applied without fatigue on the part of the operator. The author had suggested compression by means of a solid pad held in position by an Esmarch bandage passing over the perineum, but on trial in the case of a child this had proven unsatisfactory. A third plan consists in ligation of the subclavian artery. This is objectionable on account of the necessity of resecting the clavicle in order to ligate the vein, and if the vein is not ligated there is danger of the entrance of air.

Axillary methods: 1, those in use prior to the introduction of Esmarch's tubing; 2, different methods of using Esmarch's tubing. Under the first head we have: *a*, compression of the inferior flap by the fingers which seize the vessels before they are cut; *b*, Harvey's method by compression of the vessels by merns of a padded ruler thrust into the axilla; *c*, ligation or seizure of the vessels with hemostatic forceps before they are cut; *d*, Gross' compressor, but practically this is never used; *e*, Furneaux Jordan's method by making a circular amputation at the surgical neck, securing the vessels as in a hip-joint amputation, the blood vessels having been compressed by an Esmarch band or other method, followed by disarticulation of the upper end of the humerus.

Under the second head are: *a*, after making the antero-external flap, a stout pin is passed through the postero-internal flap between the vessels and the bone and elastic tubing wound over the ends of the pin. In this method there is danger of the vessels retracting above the constricting band; *b*, Esmarch's method in which an elastic tube is placed in the axilla and drawn tight over the shoulder, where it is grasped by the hand of an assistant. This is open to the danger of slipping of the bandage after disarticulation of the bone; *c*, Morre's method. In this method the tubing is applied as in the Esmarch method, but is held in place by a bandage passing around the chest and under the tubing in front and behind; *d*, Wyeth's method by pins and elastic tubing. In this method the operation is performed as follows: The arm is held at a right angle to the body. The sharp-pointed cylindrical pins, eleven inches long and one-fourth of an inch in diameter, are used. The anterior pin is introduced through the middle of the anterior axillary fold at a point a little nearer the body than what may be called the center of the fold transversely. The point of emergence is of much greater importance than the point of insertion; this should be one inch within the tip of the acromion. The second pin is introduced at a corresponding point through the posterior axillary fold, emerging an inch within the tip of the acromion. The point of emergence is of importance, for if the pin emerges near or at the tip of the acromion, the moment the head of the humerus is removed, the tubing is apt to slip downward and compress the two flaps against each other, thus hiding the cavity and permitting the vessels to retract. The pins being in position a piece of rubber tubing is wound around the axilla and shoulder on the hither side of the pins. The disarticulation having been effected, the main vessels and all visible vessels are tied and the tubing removed, the vessels spurting being grasped with hemostatic forceps. The author considers this the most satisfactory method of controlling hemorrhage, and he felt confident that any one who adopted it would abandon all other methods in its favor except, possibly, in emergency cases.

Amputation at the shoulder joint in cases in which the axilla is invaded so high that Wyeth's pins can not be used. In 1812, Dalpech proposed to make "an oblique incision extending from the external third of the clavicle to an inch above the inferior border of the great pectoral muscle. We thus discover and can cut near to its origin on the coracoid process of the scapula, the lesser pectoral. The index finger is then carried through the cellular tissue along the serratus magnus, then the subscapular, and is used as a hook in order to draw outward the mass of vessels and nerves. The artery is found in the anterior portion of this mass. The artery and vein are then ligated. The advantages of this method are that it gives wide access to the axilla, that we can determine with ease how far and how great is the invasion of the axilla, and if thought advisable, the operation can be abandoned at this point, or if it is decided to proceed with the operation the incision already made serves as the inner part of the deltoid incision. The author had employed this method with great satisfaction in a case where a sarcoma of great size had invaded the axilla nearly to the clavicle.

As a rule, recovery from this operation follows in from two to three weeks. The mortality in the more recent operations has been extremely low,—one in fourteen. Again by this method we can often amputate wide of the disease in consequence of the relative smallness of the flaps required. In view of these facts the author urged that in all cases of malignant disease of the upper end of the humerus, or even of the lower end when it is already diffused, we should not content ourselves with mere amputation at the shoulder joint, but should at the same time extirpate the scapula and clavicle.

The author reported a case in which the arm, scapula and clavicle were removed for myeloid sarcoma, occurring in a women aged 20 years. The operation was done Nov. 20, 1893. The patient recovered and is still perfectly well.

DR. ROSWELL PARK, of Buffalo, N. Y.—said that he had had two cases of total removal of the upper extremity both of which had been successful. One was for railroad injury and the other for extensive epitheliomatous ulcer. In the first case the clavicle was already broken and the subclavian vessels were secured at the point of fracture. In the second case the clavicle was divided and the vessels tied.

DR. CHAS. B. PORTER, of Boston, Mass.—as an illustration of the rapidity with which malignant disease may advance, reported the case of a patient with sarcoma of the radius where the arm was amputated above the elbow. The disease soon recurred and amputation at the shoulder-joint was made and again the disease (sarcoma) recurred so high up that no operation could be employed. The whole history of the case extended over only one year after the first operation. A case was also reported where the arm had been torn off in a railroad accident where he had subsequently removed the scapula and outer portion of the clavicle by an osteoplastic resection and the sound was closed by skin grafts. Three months later a hard plate of bone had formed very similar in shape to the scapula.

DR. JOHN ASHHURST, JR., of Philadelphia—said that he had once used the Wyeth pins satisfactorily in an amputation at the shoulder-joint. Another device to which he had resorted in several cases was to make the incision in the lower flap from without inward and secure the vessels in the wound.

SECOND DAY—WEDNESDAY.

The first paper read was that of DR. J. S. BILLINGS, Surgeon U. S. A., on

METHODS OF TEACHING SURGERY.

There are two classes of students: 1, the average medical student who is presumably to become a general practitioner; and 2, those who wish to specially fit themselves for surgical work. For the first class the work should be divided between the professors of pathology, of surgery, of clinical surgery and demonstrations. Such students should be taught diagnosis and the best methods of treatment of the injuries and surgical diseases which the general practitioner is most often called upon to treat.

Taking up the question, "How are these subjects to be taught?" we find that there are five principal methods: Didactic systematic lectures, recitations, demonstrations and practical instruction by means of manikins, cadavers and animals, theoretical clinical lectures in the amphitheater, and practical clinical instruction in ward classes.

In the old-fashioned type of medical school, the professor of surgery taught the principles of surgery, gave considerable attention to surgical anatomy and was as well the teacher of clinical surgery. At the present time in a large medical school, the subject of surgery is subdivided among a number of teachers, and under these circumstances the difficulty is to avoid useless repetitions and embarrassing contradictions, and at the same time cover the whole field of surgery. There should be a professor of pathology and the relations between him and the surgeon should be intimate and friendly, while each should be independent of the other. As regards the teaching of surgical anatomy by a teacher distinct from the professor of surgery and the professor of anatomy, there is considerable difference of opinion.

Clinical teaching is the most attractive to the average student and is often the most useful to him because he remembers it better, but as a rule clinical material is not available to cover the whole field and it is therefore necessary to add some systematic didactic teaching. This didactic teaching may cover the whole field, the clinical teaching illustrating the didactic lectures. In this way the student has the benefit of the repetition. Undoubtedly the more clinical instruction of the right kind that can be given, the better for the student and for the school. There is no doubt as to the great utility and popularity of teaching to small sections or ward classes. In employing this method care must be taken that the people do not get the idea that in a teaching hospital the interests of the patients are not as fully consulted as they should be.

Recitations and quizzes are excellent methods of teaching for the majority of students, but are only well adapted to small classes. It appears more desirable that these should be applied to the clinical teaching than to the didactic lectures.

In the clinical and didactic lectures too much of the history and literature of surgery should not be included, but every school should have a course of lectures on these subjects including bibliographical methods.

The man who intends to be a surgeon should not only make a special study of surgical anatomy but should do a considerable amount of practical laboratory work in bacteriology, pathologic histology and experimental pathology and physiology. Much of the operative technique can be learned on animals, but much of it requires work on the cadaver with frequent repetition. Of great importance is residence in a hospital.

The author suggested that perhaps too much time was devoted to embryology and morphology as a basis of the study of anatomy. The study of anatomy should be kept up throughout the course and made a part of the final examinations.

In concluding, the author asked: "Would it not be good policy for a first-class popular medical school to limit the number of pupils which it will accept to its capacity to give them proper instruction in laboratory work in practical anatomy and in clinical medicine and surgery?"

This was followed by a paper by DR. JOHN CHIENE, of Edinburgh, on

THE TEACHING OF SURGERY.

In discussing this subject one must begin with a warning: The personal equation relating to himself and the traditional equation relating to his school must be allowed for and discounted. The teaching of surgery resolves itself into two heads:

1. Systematic consideration of general principles illustrated by clinical examples.

2. A clinical—bedside—opportunity given to observe, to use and to educate all the faculties, physical and psychical.

Under either head the teacher must be a learner; the student must be a teacher. The teacher has constantly to warn the student against a blind belief and at the same time he has to speak most decidedly in giving his opinion. The practice of surgery to be successful must be dogmatic. It has been objected to systematic lectures that now that we have books there is need of a hundred lectures on every subject. Those who hold these views can never have known the stimulus of speech; can never have felt the electrical impulses passing between hearer and speaker.

The method of teaching surgery in Edinburgh was then described.

In conclusion, the writer wished to add a word with reference to the teacher of surgery. He believed in a fallow time, in a time of rest from mental activity. The best rest is change of scene. He suggested the advantages that would accrue from an interchange of chairs in the great English speaking educational centers. In this way once in seven years a teacher would for a session leave his alma mater and speak to the students of another school. Or the fallow might take another aspect; give a teacher a session off every seven years and let him do in it what seems to him good.

The discussion of these papers was participated in by Dr. J. Collins Warren, of Boston; Dr. W. W. Keen, of Philadelphia; Dr. Hunter McGuire, of Richmond, Va.; Dr. Chas. B. Nancrede, Ann Arbor, Mich.; Dr. P. S. Conner, Cincinnati, Ohio; Dr. W. S. Forbes, Philadelphia, Pa.; Dr. Robert F. Weir, New York, N. Y.; Dr. T. F. Prewitt, St. Louis, Mo.; Dr. John E. Owens, of Chicago, Ill.

SURGERY OF THE KIDNEY.

By DR. L. MCLANE TIFFANY, of Baltimore. The subject was such a large one that the author considered only those points which offer opportunity for difference of opinion. In the human body, bilateral organs are more than sufficient for the carrying on of life; not only may one such organ be removed without impairing existence, but even the remaining organ may be more or less damaged and yet life be carried on. Any paper on surgery of the kidney at the present day must take into consideration the influence of disease of the kidney on various operations on general surgery. The influence of anesthesia on the healthy kidney should be considered. In 150 cases of operation where healthy kidneys were present, albumen was found only in 2 per cent. of the cases after operation. Every case of railway accident and in some other cases where the patient had been exposed for a certain time, showed albuminous urine on admission to the hospital. In these cases operation has not been deferred on this account. Cases of advanced diabetes have not been operated on. In cases with healthy kidneys the amount of urine passed in twenty-four hours following operation is

diminished in quantity, the specific gravity usually being a little higher.

In the early stages the difficulty of diagnosis is great; especially is it difficult to recognize whether the trouble affects one kidney or both. Here it is that the cystoscope offers great opportunity. A moderate amount of urine, with a low specific gravity and an habitual low temperature independent of the condition of the pulse are danger signals more important than any other. In the recognition of the kidney affected we have to rely on pain, pressure and the cystoscope. The treatment before operation consists in exciting the kidneys to secrete by means of infusion of digitalis, acetate of potassium and infusion of buchu. Acid urine and pus suggest pyelo-nephritis very strongly. It is the author's habit not to operate until the patient's kidneys are acting well. After operation strychnin hypodermically is a useful addition to the previous treatment. The hot air bath has proven unsatisfactory in chronic cases.

When an operation on the bladder is called for and there is evidence of disease of one kidney or decided pain in one kidney suggesting disease, that kidney should be operated on at the same time as the bladder. Twice the speaker had done lithotomy in stone in the bladder, the lithotomy being done and the kidney opened at one and the same sitting. All went well. In another stone case, within two weeks acute suppurative inflammation took place and was followed by death. In a second case there was a similar occurrence.

SURGICAL TREATMENT OF SURGICAL KIDNEY.

This paper was read by DR. ROBERT F. WEIR, of New York. Suppurative pyelo-nephritis, suppurative interstitial nephritis and surgical kidney are the ordinary names given to a disease which originating as a rule in the bladder generally affects both kidneys. In this affection the kidneys are congested and studded with foci of pus. Dr. Delafield states that: "So far as I know all cases die."

It is difficult to say how often the affection is limited to one kidney, but this may not be infrequent. Even where both organs are involved it may be that something may be done for the relief of tension and the egress of pus by means of free incision made into the kidney substance.

With the happy experience of this case, the reader considered it hereafter justifiable, if the patient's general condition would warrant it, in a case of acute septic invasion of the kidneys, to make on one or both sides an exploratory incision not only in the hope of relieving the acute interstitial invasion, but also of perhaps encountering a larger and well defined focus of pus—which pathologic condition can not always be readily discriminated from the more dangerous lesions of the veritable surgical kidney. Should the symptoms point, as in the case narrated, to one kidney only, or should a double exploratory incision show the same result, a nephrectomy may with some hope be resorted to.

SURGERY OF THE URETERS.

By DR. CHRISTIAN FENGER, of Chicago. Accidental wounds and subcutaneous ruptures of the ureter have not as yet been objects of direct surgical procedure, upon the ureter at the seat of lesion.

Catheterization of the ureters from the bladder for the purpose of diagnosis has given valuable information. The procedure is reasonably practicable in the female. In man catheterization is practicable only through epicystotomy.

Catheterization of the ureter from the bladder as a curative measure for the evacuation of hydro- or pyonephrosis, has occasionally been performed. This is more difficult and uncertain than nephrotomy and the attempt to find and remedy the stenosis of the ureter from the pelvis of the kidney.

Dilatation of strictures of the female ureter by elastic bougies has been tried from the bladder with temporary success, and from the pelvis of the kidney successfully.

Permanent catheterization of the ureter from the bladder, a fistula or an implanted ureter is often tolerated only for a limited time and must be employed with caution.

Uretero-lithotomy is a safe operation by the extra-peritoneal method.

Intra-peritoneal ureterotomy should be done only when access outside of the peritoneal cavity is impossible, and should be completed by careful suturing, covering with omental or peritoneal flap and drainage.

Opening of peritoneal cavity to locate the seat of stone may occasionally be necessary, but when the diagnosis is once made ureterotomy should be done by the extra-peritoneal method.

In valve formation or stricture of ureter causing pyo- or hydronephrosis or a permanent renal fistula, nephrotomy should be followed by exploration of the ureter. This is to be done by a long flexible silver probe or an elastic bougie. The size of a bougie that will pass a healthy ureter is from No. 9 to No. 10, French scale.

Loss of substance of the ureter too extensive to permit of uretero-ureterostomy or too high up to permit of implantation into the bladder may be treated by implantation in the skin or into the bowel. Implantation into the bowel is objectionable. Implantation on the skin in the lumbar region may have to be followed by secondary nephrectomy, which, however, is much less dangerous than the primary operation.

The discussion of these papers was postponed until Thursday morning.

EXECUTIVE SESSIONS.

THIRD DAY—MAY 31.

Officers elected: President, Dr. F. S. Dennis, of New York. Vice-Presidents, Dr. J. R. Weist, of Richmond, Ind.; Dr. J. B. Roberts, of Philadelphia; Secretary, Dr. M. H. Richardson, of Boston; Treasurer, Dr. N. P. Dandridge, of Cincinnati, Ohio; Recorder, Dr. DeForest Willard, of Philadelphia; Member of Council, Dr. T. F. Prewitt, of St. Louis, Mo.

The next meeting will be held in New York City. Dr. Dudley P. Allen, of Cleveland, Ohio, was elected to membership.

The following were elected to honorary membership: Sir Spencer Wells, F. R. C. S., London, Eng.; Dr. William MacEwen, Glasgow, Scotland; Dr. M. H. E. W. Schede, Hamburg, Germany; Prof. Ernst v. Bergman, Berlin, Germany; Prof. Karl Thiersch, Leipzig, Germany; Prof. Theodor Kocher, Bern, Switzerland; Prof. Jules E. Péan, Paris, France.

DISCUSSION ON PAPERS ON RENAL AND URETERAL SURGERY.

DR. M. H. RICHARDSON, of Boston—emphasized the importance of examination of the urine prior to all operations. In regard to the method of performing nephrectomy, he dwelt upon the abdominal method, the incision being made in front laterally. This enables the operator to control bleeding which is the chief source of danger in the operation. In this method the surgeon is able to determine the presence or absence of the other kidney. He believed that by this method the mortality of nephrectomy would be greatly reduced by so providing for hemorrhage that it could not be an element in the mortality.

DR. H. H. MUDD, of St. Louis, Mo.,—agreed with Dr. Tiffany that in traumatic lesions of the kidney, even gun-shot and stab wounds it is not always necessary to do nephrectomy. He had seen such cases recover. He had also met with a number of cases of extensive laceration of the kidney from contusion, in which there was no external evidence of such injury. In many of these cases recovery without operation. Where operation was needed he believed that partial nephrectomy was justifiable. If necessary a secondary operation can be done. The removal of kidneys so injured, as a primary operation is apt to be disastrous.

In pyelo-nephritis and renal lithotomy the first operation should be tentative, consisting of incision and evacuation, the kidney being allowed to remain; a secondary operation being performed if necessary. He did not favor the abdominal incision for the removal of the kidney on account of the risk of infecting the abdominal cavity in suppurative conditions of the kidney, and because the lumbar incision was usually sufficient and if necessary it could be extended and the abdomen opened.

DR. T. F. PREWITT of St. Louis—called attention to several cases of renal stone, laceration, etc., coming under his observation. One of these cases was that of a man who had passed scales of stone by the urethra and in whom operation showed a stone in the pelvis of the kidney, with several small detatched particles. He was unable to offer an explanation of this separation. With regard to diagnosis, he held that a large amount of pus with a small amount of mucus in the urine indicated that the trouble was in the kidney rather than in the bladder.

DR. STEPHEN H. WEEKS, of Portland, Me.—reported a case of a man who developed an abscess in the groin after having had symptoms of renal colic some months before. On opening this abscess, pus was discharged and subsequently a small calculus was passed. No urine was discharged through the abscess at any time. The sinus has since almost healed.

DR. WILLIAM H. CARMALT, of New Haven, Conn.—reported the case of a woman on whom it was thought nephrectomy might be required. On preliminary examination through an abdominal incision only one kidney could be discovered.

The patient died three years later and autopsy showed that the second kidney was located in the pelvis.

THE TREATMENT OF MALIGNANT DISEASE WITH THE TOXINES OF ERYSIPELAS

was read by DR. WILLIAM B. COLEY, of New York—The author had in a previous paper reported ten cases treated by the injection of living cultures of erysipelas. The first case was one of an inoperable recurrent sarcoma of the tonsil. The injections were continued some time without causing an attack of erysipelas, but finally a culture from a virulent case of the disease was used and caused erysipelas. The tumor ceased to enlarge, the general condition improved and the patient is still living, three years after the beginning of the treatment. Six of these ten cases were sarcomata and four carcinomata. In only four of the cases was erysipelas produced. Those cases in which the disease was not induced seemed to be as much benefited as those in which it was, and this led to a trial of the toxic products instead of the living cultures. The effect also of a combination of the toxines of the bacillus prodigiosus with those of the streptococcus of erysipelas was also employed and found to be more satisfactory than that of the latter alone. Since December, 1892, thirty-five cases of inoperable malignant disease were treated by the injection of the toxines of these two organisms. Twenty-five were cases of sarcoma, seven of carcinoma and three either sarcoma or carcinoma. Among the cases reported were the following:

A case of sarcoma of the abdomen and pelvis followed by recovery.

A case of recurrent sarcoma of the back and groin with entire disappearance of the tumor and no recurrence fourteen months after cessation of the treatment.

Sarcoma of the iliac fossa with partial disappearance of the tumor, the health of the patient being perfect.

Inoperable sarcoma of the abdominal wall; entire disappearance under treatment.

Sarcoma of the leg recurring after amputation with enlargement of the glands of the groin; marked improvement but still under treatment.

Enormous round-celled sarcoma of the neck and thyroid with marked improvement.

Large pulsating round-cell sarcoma of the ileum and buttock. Marked diminution in size.

In the eight cases of carcinoma treated there has been marked improvement in two, slight improvement in four and no effect in two. In no case has the tumor disappeared.

Of the total number of cases treated there is reason to hope for a permanent cure in five. Nine cases showed a marked improvement, eight showed only slight and temporary improvement, while in two there was no apparent effect. One of these latter was an osteo-sarcoma of the sternum in which only four injections were given. The other case was a sarcoma recurring after removal of the tertir and in which owing to the condition of the patient only small doses could be employed. The spindle-celled and mixed-cell sarcomata seem to be the most susceptible to the action of the toxines, and periosteal and osteo-sarcomata less susceptible.

An important element in the success is the character of the culture employed. Cultures from any but virulent cases have but little effect. With regard to the manner in which the treatment acts, the author was inclined to base the explanation on an acceptance of the micro-parasitic origin of malignant disease. It is only in this way that we can explain the effect of this mode of treatment.

The following conclusions were presented:

1. The curative action of erysipelas upon malignant tumors is an established fact.

2. Its action is much more powerful in sarcoma than in carcinoma.

3. It is chiefly due to the toxine of the erysipelas streptococcus which may be isolated and used with safety.

4. Its action is greatly increased by the addition of the toxine of the bacillus prodigiosus.

5. The toxine to be of value should come from virulent cultures and should be freshly prepared.

6. The results obtained from the use of toxines without danger are so nearly if not quite equal to those obtained from an attack of erysipelas that inoculation should never be resorted to.

VENOUS TUMOR OF THE DIPLÖE.

This paper was read by DR. LEWIS S. PILCHER, of Brooklyn. The case reported differed from others which had been described, in that the tumor did not communicate with the longitudinal sinus, but was essentially a large venous cavity into which numerous diplöic veins opened. The patient was a girl aged 15 years. When 5 years of age she fell and struck the top of her head. Within a few days a small soft swelling was noticed at the site of injury without pain or tenderness. This gradually increased in size. At the end of five years, it was lanced and a small quantity of clotted blood extruded. It immediately refilled. It was repeatedly opened with the same result. She came under the observation of the author in 1894. At this time there was a prominent tumor over the site of the anterior fontanelle, about two and a half inches in its largest diameter. Over the convexity of the tumor the skin was thin without hair. In the right anterior quadrant of the base an elevated plate of bone could be felt. The tumor was soft and could be diminished very slightly in size. It was gradually enlarging. March 14, the author operated for the relief of this condition. The tumor was opened. In the anterior part of the base, the cranial bone was wanting and over a space of two and a half by one and a half centimeters the dura mater was exposed. Certain venous channels of the diplöe were seen to be opened and from these free bleeding took place. The overhanging bone edge was cut away with bone forceps, the base of the cavity was well curetted, and the cavity packed with iodoform gauze, and as far as possible the wound was sutured. No complication disturbed the after course of the case.

FOURTH DAY—FRIDAY.

Paper of DR. GASTON, of Atlanta, on

MOOTED POINTS AS TO FRACTURES OF THE ARM, WITH NOTICE OF AN IMPROVED SPLINT.

The purpose of the paper was to ask attention to practical considerations touching the treatment of fractures near the articulations of the arm. In cases of fracture complicated with dislocation, the author saw no advantage in first setting the fracture, but preferred to reduce the dislocation before treating the fracture, and efficient means should be taken to prevent the recurrence of the dislocation.

With regard to fractures at the wrist, the only one in which there is any notable diversity of opinion is the Colles fracture, which occurs from half an inch to one inch from the carpal articulating surface. After considerable experience with the double pistol-handle shaped splint in the treatment of Colles fracture the author had never seen a case in which there has remained any permanent impairment of the use of the fingers or the wrist joint, nor has any material deformity followed the treatment.

Fractures above and below the elbow. Dislocation of the head of the radius or the upper part of the ulna is frequently observed in connection with fractures of the lower extremity of the humerus. These require correction before the fracture is treated. In considering whether the arm should be dressed in the extended or flexed position, we should investigate thoroughly the bearings of tending into the axilla with a crutch-like termination, and the lower branch reaching the wrist.

In the treatment of fractures near the elbow, the author applies a roller bandage from the fingers to above the seat of injury, and with the arm in a flexed position pasteboard splints are molded to its inner and outer surfaces. These splints extend from the wrist to the shoulder. An internal angular splint is applied to the outside of the dressing until the pasteboard has become thoroughly dry. This dressing has all the advantages of plaster-of-paris and can be removed daily if it is so desired. The results of this method have been entirely satisfactory.

Fractures near the head of the humerus. These may be intercapsular or may only implicate the tubercle outside of the capsule. The most frequent seat is through the surgical neck. It is for this class of cases that a special splint has been devised by the author, the object being to effect extension and counter extension and keep the fragments in place and at rest.

THE REMOVAL OF STONE IN THE BLADDER, WITH THE PRESENTATION OF A NEW LITHOTRITE.

By DR. W. S. FORBES, of Philadelphia—The points considered were:

1. The measured crushing resistance of vesical calculi.
2. The lithotrite from a mechanical point of view.
3. The measured strength of the lithotrite.
4. A new lithotrite.

A table was given of the size, displacement, specific gravity and measured crushing resistance in pounds and ounces of 183 human vesical calculi. The strongest calculus in this group took on the testing machine 406 pounds to crack it.

Several took upward of 300 pounds to crack them. In testing the strength of the lithotrites on the testing machine, the strongest lithotrite, No. 33 F., made by Tiemann & Co., had the female blade bent at 650 pounds. A Thompson lithotrite, No. 29 F., made by Weiss, London, bent badly at 333 pounds, on the same testing machine. The practical bearing on these observations is that the strength of the lithotrite may be tested and stamped on it before it leaves the instrument maker's shop, thus enabling the surgeon to begin his operation knowing the strength of the lithotrite.

The testing apparatus for determining the force required to crush the stone and the strength of the lithotrite was exhibited and demonstrated. The apparatus was the invention of Mr. John S. Forbes, son of the author. Mr. Forbes had also devised a new lithotrite designed to furnish a stronger instrument and obviate some of the defects of former instruments.

EXTIRPATION OF THE LARYNX.

By Dr. Wm. H. Carmalt, of New Haven, Conn. In this case the operation was done in such a way as to permanently close the opening into the mouth so that there should be no communication with the lungs. He was induced to do this by his knowledge of a case in which the larynx was extirpated and the opening to the mouth subsequently closed. The operation was done two and one-half years ago by Dr. J. Solis-Cohen, of Philadelphia, and the man gained the power of speaking loud enough to be heard in a large room. This was preceded by swallowing or drawing air into the pharynx.

Dr. Jarvis S. Wight, of Brooklyn, exhibited a number of instruments including needle forceps, self-threading needle, aneurism needle forceps and a new form of knife provided with a beak, substituting the use of a grooved director.

The following papers were read by title: "The Effect of Erysipelatous Attacks on Tuberculosis," Dr. De Forest Willard, of Philadelphia; "Hernia," Dr. W. T. Bull, of New York; "Cases of Extra-uterine Pregnancy with Remarks," Dr. M. H. Richardson, Boston; "Treatment of Urethral Vegetations by a Circular Cutting Curette," Dr. John B. Deaver, Philadelphia; "Report of Surgical Cases," Dr. Chas. B. Porter, Boston.

Medical Society District of Columbia. Report on Typhoid Fever.

The committee appointed by the Medical Society to report upon the subject of typhoid fever in the District of Columbia begs leave to make the following report:

The consideration of this subject by the Society is justified and demanded by the very great prevalence of typhoid fever and by the large number of deaths, which gives Washington a most unenviable position among American cities.

It is right that a disease which is known to be preventable, which has been almost abolished in some of the capitals of Europe, should receive here, in the capital of this country, the closest study and attention. If the causes of its persistence are known, if, above all, these causes can be removed, it is our part and duty to make the facts public and to arouse public attention to the necessity and urgency for action. Who is better fitted to speak authoritatively on this subject than the Medical Society of the District, whose members are in daily contact with the disease, and who have every opportunity to study the modes of its diffusion among our population?

The committee has endeavored to present, as briefly as possible, the data upon which an intelligent judgment can be formed. The magnitude of the task of making a complete study of typhoid fever in all of its aspects must be apparent to all, and the committee must ask an indulgence for the imperfection of the report in many of its details. Much could only be touched upon, much had to be omitted. The importance of the subject demands continued observation and study, and it is suggested that the work be continued from year to year in whatever way seems best to the Society.

The committee is indebted for much valuable assistance from the District Commissioners and their assistants, who have all shown great interest in the work of Society in this investigation.

The accompanying report will consider:

1. The prevalence and mortality of typhoid fever in the District.

2. The relations of the dissemination of the disease to the *a*, public water supply; *b*, to the pollution of the soil with the leakage from privies, from defective sewers and from the backing up of sewerage from tidal movements; *c*, to the drinking of well or pump water; *d*, to contaminated milk and to other causes.

3. The difference in mortality in different areas of the city, with a view to discover the causes.

4. Conclusions based upon the foregoing data, as to what measures should be taken to diminish the spread of the disease.

PREVALENCE AND MORTALITY OF TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

The following table gives the statistics of typhoid fever in the District of Columbia from 1881 to 1893, the ratio of deaths from all causes and the total deaths based upon the records of the health office of the District:

Typhoid fever in the District of Columbia, 1881 to 1893, inclusive.

Years.	Population.	Deaths from typhoid fever.	Ratio of deaths from typhoid fever to 1,000 deaths from all causes.	Ratio of deaths from typhoid fever to each 10,000 population.	Total deaths.
1881 . . .	183,000	67	16.2	3.6	4,136
1882 . . .	188,653	120	26.2	6.3	4,571
1883 . . .	194,980	92	21.4	4.8	4,286
1884 . . .	200,000	76	16.0	3.8	4,814
1885 . . .	200,000	124	25.0	6.2	4,998
1886 . . .	206,000	125	27.2	6.2	4,674
1887 . . .	210,000	116	25.0	5.5	4,685
1888 . . .	225,000	168	32.6	7.4	5,040
1889 . . .	250,000	170	33.3	6.8	5,152
1890 . . .	250,000	208	37.7	8.3	5,564
1891 . . .	250,000	208	36.6	8.3	5,729
1892 . . .	260,000	183	30.4	7.0	6,068
1893 . . .	285,000	186	28.6	6.5	6,452

From 1881 there has been an almost uninterrupted yearly increase of the death rate, the highest point being reached in 1890, with a ratio of 8.3 to 10,000 inhabitants. In 1891 the rate was 8.3; in 1892 it had dropped to 7.0, and in 1893 to 6.5. The lowest mortality, 3.6 and 3.8, was in 1881 and 1884. The past nine years show a greater number of deaths, representing a larger number of cases, than at any previous time. In the past two years the ratio has been less than in the previous seven years. An exception should be made to the percentage of 1893, as given in Table 1. It is based upon an assumed increase of 25,000 population in one year. This is not thought to be justified by the actual increase of previous years, and the percentage of 6.5 as the ratio of deaths in this year should be much higher, as high, certainly, as 1892, which is 7.0 to 10,000 population.

The actual number of annual deaths has increased from 67 in 1881 to 208 in 1890 and 1891, both years reaching the same number. In 1892 there were 183 and in 1893 186 deaths.

In Table 2 the ration of deaths in the white and colored population is given, in the ten years from 1883 to 1893, inclusive. The whites had an average mortality of 5.8 and the blacks of 7.8 to 10,000 population. Here, as in the general mortality statistics, the high death rate is due largely to the greater fatality of typhoid fever among the colored race.

Typho-malarial fever is not included in these tables. If death from this cause were added to those from typhoid fever, as they should be done, the percentage of fatal typhoid cases would be much higher than here given. The present drift of opinion is to abandon this term altogether, as it leads to continued confusion and error. That it is being abandoned may be inferred from the decrease in the death returns from this cause *pari passu*, with increase in the returns of typhoid fever. (See chart.)

Table 3. Deaths from typho-malarial fever and malarial fevers in the District of Columbia from 1881 to 1893:

Deaths from typho-malarial fever in District of Columbia.	Deaths from typho-malarial fever in Baltimore.	Mortality from malarial fevers in District of Columbia.	Mortality from malarial fevers in Baltimore.
31	50	99	37
44	44	112	22
58	48	93	34
34	66	66	29
30	75	78	27
17	58	55	30
22	55	99	28
14	41	62	24
28	53	80	23
35	54	68	19
20	39	56	26
23	33	62	19
18	31	85	25

The mortality from malarial fevers, as seen in the above table, is still greater than seems possible; the progressive falling off in the number of fatal cases shows either that malarial diseases are on the decrease or that there is a change of opinion as to the nature of many cases of fever.

In order to represent more clearly the extent and fatality of typhoid fever in this city, maps have been prepared which accompany this report.

Map 1 is compiled from the maps of the health office, and is made up of an aggregation of the fatal cases occurring in residences in five years from 1888 to 1892, inclusive, and shows the number of deaths during that period.

There were in the whole city 626 deaths in residences.

The same map shows the number of deaths from the malarial fevers, including the deaths from typho-malarial fever. The actual number of deaths from typho-malarial fever in the five years was 120, an annual average of 24. There were 328 deaths from malarial fevers in the same period in residences, an annual rate of 66. No one can believe that malarial fevers have any such mortality in the District, and we are forced to the conclusion that many of the fatal cases of malarial fevers are also typhoid fevers. In public institutions and in the county the fatal cases of malarial fever numbered 130 in the five years, making a total of 458 deaths from this cause.

The map shows that there is a coincidence in locality of the deaths from typhoid fever, typho-malarial fever and malarial fevers.

Deaths in the public institutions, hospitals and in the county are not represented on this map; there were 201 in the hospitals and 90 in the county.

Map 3 shows the locality of deaths from diarrheal diseases. Here, too, the area of greatest mortality is the same as that of typhoid and the malarial fevers.

Table 4 gives a comparative statement of the mortality from typhoid fever here and in a few of the chief cities of this country and Europe. The average annual mortality in the District to 10,000 population was 6.2; in Philadelphia, 6.3; Chicago, 7.8; Boston, 4.1; Baltimore, 4.1; New York, 3.1; Paris, 6.1; Berlin, 2.0.

Comparative statement of the number of deaths per 10,000 inhabitants from typhoid fever in the cities named during the years 1881 to 1893, inclusive, and the general average therein:

Years.	District of Columbia.	Boston.	New York.	Philadelphia.	Chicago.	Baltimore.	Berlin, Germany.	Paris, France.
1881	3.6	5.2	4.8	7.4		5.7	4.7	8.7
1882	6.3	5.1	4.0	7.7		4.6	3.0	14.3
1883	4.8	4.6	4.7	6.3		3.4	3.0	8.4
1884	3.8	5.0	3.5	6.1		4.0	1.8	7.0
1885	6.2	3.8	2.9	6.4	7.4	4.0	1.9	6.0
1886	6.2	3.4	3.0	6.3	6.8	3.8	1.6	4.2
1887	5.5	4.6	2.9	6.2	5.0	3.4	1.3	6.1
1888	7.4	4.1	2.3	7.7	4.5	3.8	1.4	3.3
1889	6.8	4.1	2.5	7.0	4.1	4.5	1.3	4.4
1890	8.3	3.4	2.2	6.3	8.4	5.6	1.9	2.9
1891	8.3	3.3	2.3	6.4	16.0	3.3	0.9	2.2
1892	7.0	2.9	2.2	4.9	10.3	4.2		
1893	6.5							
Av'ge	6.2	4.1	3.1	6.31	7.81	4.19	2.08	6.14

The large chart adopted from the valuable report of Erwin F. Smith, now of the Agricultural Department, on "The Influence of Sewerage and Water Supply on the Death Rate in Cities," shows the comparative mortality in different cities of this country and Europe. We will have occasion to refer to this chart later.

CAUSES OF THE PREVALENCE OF TYPHOID FEVER.

What interests us most is to trace the cause of the disease as it exists here, and in so doing it is assumed in this report that the question of its etiology is definitely settled, and that the conditions underlying its prevalence are: 1, an impure water supply; 2, the imperfect drainage of a polluted soil; 3, infected milk; 4, and other causes.

1. The water supply of our city and the District comes chiefly from two sources, the Potomac River and the wells which are scattered about the city and county.

By reference to the tabulated list of cities (Table 5) it will be seen that Washington, out of fifty of the largest cities, stands second in the list, with a per capita and per diem supply of 177 gallons. Only Buffalo, with 196 gallons, is better supplied, while Philadelphia has 111 gallons, Baltimore 92, Boston 89, and New York 74.

Much of our public water supply is used in government buildings and in public fountains.

It is not possible to compare the extent of typhoid fever in cities with abundant water supply with those which have an imperfect supply, or none at all, for cities well supplied with water are at the same time furnished with a good sewerage system, and it is not possible in most cities to separate these conditions so as to discover the influence of water supply alone.

The example of Dantzig, however, shows that an abundant water-supply alone does not diminish the death rate. This city was supplied with water in 1869, and sewered in 1872. No marked diminution in the death rate of typhoid fever occurred until after the introduction of the sewers. Washington, with a daily individual supply of 177 gallons, has an average annual mortality of 6.2, while New York, with 74 gallons per capita, has 3.1 deaths yearly to 10,000 population. Abundance of water alone, as might well be supposed, does not limit the spread of typhoid fever.

There is evidence enough to show that the public water supply may be contaminated with typhoid bacilli, and thus propagate the disease. The epidemic at Providence, R. I., in November, 1888, which was traced to the pollution of the water of the river with fecal matter from typhoid cases, three and a quarter miles above the pumping station, is a case in point. The bacilli were found by Pruden and Ernst in the filters of the Providence houses. It is an admitted fact that the disease has often been originated in this way, but it is a question as to what value this mode of infection has as compared with others. Does the typhoid fever, which is the chief endemic fever of Washington, owe its continued existence to recurring or continued infection from this source? Would we eliminate the disease by purifying the Potomac supply and destroying all its organic life?

Von Pettenkofer and other authorities do not believe in this as a usual mode of infection; it is a popular belief, easily laid hold of, easily understood, but difficult to prove.

The Potomac water has been subject to very careful analyses, and "in general, the water may be said to be in excellent condition and to compare extremely favorably . . . with that of other cities. Its chief defect" is "the presence of suspended clay in the winter" and after heavy rains in any season.

The value of the so-called biologic analyses of drinking water is, as Theobald Smith says (*Medical News*, Philadelphia, April 9, 1887), still very unsettled. As the result of one year's observation made by him, a relation was found between turbidity and the presence of bacteria. Bacteria were most abundant in winter, January and February having the highest average; August, September and October, the months of the greatest prevalence of typhoid fever, having the lowest. Bacteria, most of which were harmless, were most abundant after heavy rains, and their presence in association with turbidity proved the then source from the washing of the surface of the soil.

In the latest bacteriologic report on Potomac water, Theobald Smith adheres to this statement, and says that fecal bacteria and turbidity were coincident—that is, that rainfall carries into the Potomac whatever may happen to be on the surface of the soil; clay, manure from the fields, inorganic or organic matter of any sort. The nature of the country through which the Potomac flows, much of it being mountainous, as well as the absence of large cities on its banks, diminish the risks of infection. As the country comes more and more under cultivation, turbidity and impurity from the washing of plowed and manure-covered land will be more common. The possibility of the introduction into the water of the microörganism of typhoid fever is dependent upon its presence in localities washed by the Potomac and its tributaries. The question, after all, is not whether typhoid fever can be propagated in this way, but whether, as a matter of fact, it is propagated in this way. Before this question can be determined other probable sources of origin must be considered.

It is an unjustifiable conclusion, that because fecal bacteria are found in Potomac water, therefore typhoid fever is usually propagated by the drinking of Potomac water. Bacteriology may lead us astray here, and data of a very different sort must receive due weight before a logical conclusion can be reached.

(To be continued.)

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SATURDAY, JULY 14, 1894.

THE DOCTOR'S HOLIDAY.

The opinion was expressed by the late SIR HENRY HOLLAND, that every physician needs an annual holiday for the recreation and recuperation of his physical and intellectual powers. His own practice was to take a holiday of three months' duration which he would spend in a yachting trip to Norway or on the Mediterranean, or devote to some similar and equally agreeable diversion. He thought that if the profession generally would adopt his advice and follow his example, they would be better physicians and more useful to the community during the remaining portion of the year than if they had kept steadily at work. There is sound philosophy in this teaching. It is a convenient but selfish assumption by their patients, that physicians are superior to the ills that flesh is heir to. In fact, the physician is popularly regarded as the repository of all the secrets of hygienic and therapeutic art, whereby every one might be kept in good health, if, indeed, he might not even enjoy perpetual youth, if he only chose to live according to disciplinary rule and method, and swallow the prophylactic dose of disagreeable drugs in proper season. We know, however, that this is not exactly in accordance with fact. If doctors do as a general rule have better health than their neighbors, it is because their vocation makes them sober, earnest men, who are liable to be called upon at any time, and at briefest notice, and ready to promptly assume the responsibility of life and death, at the bedside of the sick or injured. Plain living and high thinking are probably exemplified more in the ranks of the medical profession of to-day, than in the followers of any other calling. Leading more temperate lives, they may have better health than some who are accustomed to require their services; still, they are but mortal, and they are sometimes unpleasantly reminded by infirmity, or failing health, of their common humanity when, alas, it may be too late to remedy the evil.

If a holiday will increase the efficiency of the doctor by improving his health, it is a duty which he owes to his patients, as well as to himself and his family, to temporarily lay down his work and to seek, among novel surroundings and unaccustomed scenes, a new stock of impressions and a new store of health. In fact, physicians living at some altitude claim that it is only by descending to the ocean level for a few weeks or months, every year, that health can be permanently maintained, or that cerebral injury can be prevented. Others living upon the plains, find inspiration and health in mountain climbing, while all sedentary workers are benefited by occasionally taking a pedestrian or equestrian tour, or by outdoor sports, such as fishing and hunting. The ancient temples of ÆSCULAPIUS were not placed amid thickly populated scenes; but in localities where HYGEIA could be worshiped in her native home, among the woods and near mineral springs, whose healing waters too readily obtained the credit of therapeutic result. This is beautifully expressed in the following stanzas, which deserve a place in all of our text-books on medicine:

"The murmur of a waterfall
A mile away,
The rustle when a robin lights
Upon a spray,
The lapping of a lowland stream
On dipping boughs,
The sounds of grazing from a herd
Of gentle cows.
The echo from a wooded hill
Of cuckoo's call,
The quiver through the meadow grass
At evening fall,—
Too subtle are these harmonies,
For pen or rule,
Such music is not understood
By any school;
But when the brain is overwrought,
It hath a spell,
Beyond all human skill and power,
To make it well."

Certain it is that great truths seem to find their most fitting expression in metrical phrase or poetic language. The sanitary lesson thus pleasantly brought to our attention is worth pondering seriously on account of the important interests at stake. An ounce of prophylaxis is said to be worth a ship-load of Galenical therapeutics; and, if we take the former in time, it may be possible to fulfil the thought of HOLMES and allow the latter to sink into the sea with all its direful consequences to the fishes, and corresponding advantage to humanity.

A TYPICAL ANTI-VACCINATIONIST.

Time was when the outcry of the anti-vaccination paranoiac against JENNER and his discovery found ready vent through the columns of the daily press, to the disquiet of many a worthy soul. It is among the encouraging signs of an increasing spread of in-

telligence that he has met with so little of editorial favor during the recent smallpox excitement. But the crank still lives and gets an occasional hearing. His latest noteworthy appearance is in the Boston *Globe* of the 22d ult., and it is noteworthy solely on account of the individual—not at all on account of his utterances, which are of the usual stereotyped character. The individual in this instance is one "RUFUS KING NOYES, M.D.," a person who for some months occupied the attention of the medical college faculties, and of the courts of three States some ten or a dozen years ago.

The Boston *Globe* is one of the influential newspapers of New England and in order to enable it to antidote whatever of harm its quasi-indorsement by publication of NOYES' screed may have worked, the following facts in the history of that champion of anti-vaccination are placed at its service:

In 1880, RUFUS KING NOYES, an anti-vaccinationist of some local notoriety in Lynn, Mass., obtained a charter of incorporation for the "Bellevue Medical College of Massachusetts"—a colorable imitation of the title of the Bellevue Hospital Medical College of New York. Two years later a "diploma" of this concern, signed "Rufus King Noyes, M.D., *President*, was presented to DR. RAUCH, then Secretary of the Illinois State Board of Health, and a license to practice medicine was demanded thereon. An investigation of the Boston "Bellevue" was at once set on foot, during which letters written by a young journalist resulted in an agreement by NOYES to furnish for $150 tickets showing attendance upon two courses of lectures, and a "diploma" of graduation from his "college" to a man whom he had never seen; who had never been in Boston in his life; who only claimed to "hav bin Redin medesin about a year;" but who, having "ben tending on Sick purty Near all (his) life," thought he had a "Purty Good Idee about the Bizness;" and who furnished a thesis on "Vacinnatioun," in which he professed to be ready to make "a Strong kick on the Part of our noble Proffession against the Inseartion into the Pure Blood and Vitle fluid of our Inosent offspring of that Diseas of the animals cow-pox."

This correspondence was begun in October, 1882, and on Nov. 2, 1882, NOYES wrote:

> DEAR SIR:—You, as a candidate for graduation, have been favorably considered by the faculty, and your thesis has been examined by the Professor and found to be acceptable. . . . You are correct on the Vaccination question, and I am confident you will meet with continued success. Your diploma will be sent C. O. D, one week from the date of this letter. It will be securely packed in a pasteboard box. Your bill for diploma and two tickets is $150," etc.

On receipt of the "diploma" it was promptly turned over to the United States authorities, together with the correspondence, as the basis of a prosecution for illegal and fraudulent use of the United States mails—that being, as it was advised, the only ground upon which a charge could be made. On the trial NOYES and his coparceners pleaded that they were legally incorporated and empowered by the laws of Massachusetts to issue diplomas and confer degrees without any restriction as to course of study or professional attainments. The United States Commissioner held the plea to be valid and dismissed the case, saying:

> "The law makes the faculty of the college the sole judges of the eligibility of applicants for diplomas. There is no legal restriction, no legal requirements. If the faculty choose to issue degrees to incompetent persons, the laws of Massachusetts authorize it."

Whereupon the "American University of Boston," the "First Medical College of the American Health Society"—now the notorious "Vermont Medical College" at Rutland, Vt.,—the "Excelsior Medical College," *et al.*, were immediately incorporated and the Massachusetts diploma-selling industry developed into magnificent proportions for a time. But, as MR. KIPLING remarks, that is another story.

"RUFUS KING NOYES, M.D.," the diploma-mill manipulator of 1882 is the typical anti-vaccinationist of 1894, and his diatribes should find no place in the columns of a reputable newspaper.

NOT METHODS, BUT RESULTS.

In a recent issue of this JOURNAL[1] some comments were made upon the remarkable argument urged in an address on the subject of "cramming in our medical schools." The argument was against the higher standard of medical education now in vogue as compared with that of a few years ago, the result of which, it was claimed, has been "to increase the hardships of the medical student."

DR. BAYARD HOLMES has been moved to discuss the same subject and arrives at the conclusion that State control of medical education is the remedy for the defects, abuses and evils in the present system. "It would pay the State," he says, "even if it were not its duty as the only capable corporation and the one most interested, to support, direct and conduct all the medical education of the country. This will be done so soon as we, as a nation, value men above all other products of our clime; so soon as men believe that the Kingdom of Heaven may come here in this world as the *Pater Noster* indicates; so soon as selfish men cease to exploit for their own aggrandizement, the sacred labor of medical education; so soon as our universities apply the same ethical and pedagogic principles to their medical departments as they use in directing their other graduate schools."

Meanwhile it remains to suggest and again urge that the divorcement of the educational from the licensing agency will do much toward bringing about

[1] A Singular Plea for the Unfit. JOURNAL AMERICAN MEDICAL ASSOCIATION, June 23, 1894.

the medical millennium for which DR. HOLMES is so earnestly laboring. Let the consensus of the profession fix the standard of qualification for the practice of medicine and then let the State apply that standard regardless of where or how the applicant obtained the qualification. The welfare of the public and of the profession is not involved, primarily, in the methods of medical instruction, but in the results. In regard to an applicant for the right to practice, neither the profession nor the public is greatly concerned in the question, "Where did he study?"—but rather in the question, "Has he learned?" Not in "How long has he studied?"—but "What does he know?"

LIABILITY FOR PROMISE TO CURE.

The case of Boscow v. State, decided by the Court of Criminal Appeals of Texas, May 23, 1894, was an appeal from a conviction, in the Fayette County Court, of obtaining money under false pretenses. The party so convicted insisted that because the information charged, as a part of the false pretenses relied upon, that he was to perform certain acts in the future, to-wit, to cure the wife of the complaining witness, the same could not be made the basis of swindling. It is true, says the Court, that, if the witness had relied on the promise, it could not be swindling; but, it holds, that where the promise is connected with the false pretense of an existing fact, as that the pretender was a physician, and at that very time associated with other physicians known to the witness, and he thereby obtained a credit and influence with the latter that he could not otherwise have obtained, it would support the charge. A part of the false pretenses upon which the money was alleged to have been obtained in this instance was that the party in question was a member of a medical institute in San Antonio, in which there were twelve physicians. One of these, the Court holds, was competent to testify to the falsity of such statement.

SURVIVAL OF ACTIONS FOR MALPRACTICE.

At common law, rights of action for injuries to the person terminate with the death of the wrong-doer. In order to secure their survival, various statutes have been enacted in the different States providing for their maintenance against the personal representatives of the deceased. Michigan has a statute which provides that if any person professing or holding himself out to be a physician or surgeon, shall be guilty of any malpractice, an action may be maintained against such person so professing, whether licensed as a physician and surgeon or not, and another, which provides for the survival of actions "for negligent injuries to the person." The executors for a deceased physician sought, in the case of Norris v. Grove, decided May 18, 1894, by the Supreme Court of Michigan, to secure the vacation of an order continuing an action for malpractice against them. They contended: 1, that by the latter act the Legislature did not intend to include actions for malpractice; and 2, that the amendment to the general statute, relative to the survival of actions, can not be held to be an implied amendment of the statute respecting actions for malpractice. The latter contention is, the Court thinks, without force. Provisions conferring a remedy, and those which limit the time within which such remedy may be employed, and those which relate to survival, are rarely found in the same statute. The statute provides for the survival of all actions for negligent injuries to the person. The word, "person," is evidently used in contra-distinction to the word, "property." It is true that the books speak of wilful malpractice, negligent malpractice, and ignorant malpractice; but the Court does not consider it necessary to determine, in this case, whether all actions for malpractice would survive under the statute in question. Yet it does hold, that unless the injury be a negligent injury, the action will not survive, and that it is the right of an injured party to elect to treat an act as negligent, although it was in fact wilful and malicious. It is no more difficult, it says, to determine the negligence of an injury in an action for malpractice than in any other action for injury to the person. After thus expounding the law, and for the reasons given the Court denies the relief prayed.

CORRESPONDENCE.

Intestinal Putrefaction (Auto-Infection).

It seems remarkable that with all the teliologic acumen of our profession, one of the principal causes of disease has been hitherto almost entirely overlooked—that of intestinal putrefaction, so palpable that it could not have been concealed; and it is more than probable that the largest proportion of fatalities have heretofore resulted, directly or indirectly, from that single cause. The idea is a simple cognition apart from any technical qualification; in other words, we have only to see and believe; for if we observe the natural process of digestion, assimilation and elimination we can not fail to perceive the inevitable morbid influence that must necessarily follow in the wake of delayed defecation. As soon as the mass of chyme emerges from the stomach, the elements of which it is composed begin to change their relations, and as it gradually passes down through the alimentary canal the nutritive combinations are absorbed into the circulation, leaving the remainder constantly tending to putrefaction by retrograde combinations and the addition of intestinal excretions of systemic waste; and when it finally reaches that great filtering reservoir, the colon, the greedy absorbents of that receptacle drink up indiscriminately all that remains in a fluid state, to pass into the circulation and poison the tissues wherever they go; thus crippling the vital functions and establishing disease. It is possible, however, that a part of these elements may be appropriated in some process of metabolism, while the remainder must fall on the kidneys and other emunctories to be cast out as waste. It is evident that these

excretory organs would be sufficient to eliminate the poison if the natural calls for evacuation were promptly obeyed, as happens with inferior animals that labor under no ethical restraint; for it is a fact that those animals, provided with suitable food, pass their lives exempt from disease until they are weakened and wasted by age, though exposed to all the vicissitudes of weather. And so probably might the human escape the pangs of disease by obedience to this law of Nature. During his life the writer has been curious to learn the habits of friends who seemed never to be sick, and as a general rule they have all been accustomed to free evacuations every day, usually in the morning. But we must be aware that a vast majority of our kind are guilty of procrastination, exposing them to all the blighting evils of constipation, more especially among sedentary persons, who compose the larger part of our valued population. On the contrary, those subject to constipation have never been free of some complaint, and many have succumbed to malignant diseases. These are stubborn facts and what do they indicate? They teach the absolute necessity of daily evacuations by the gentlest means and never by active purging, except in cases of extreme obstinacy; surely the great variety of laxative pills and preparations, in easy reach of every one, can supply that want.

As an excuse for this lucubration, it may be insinuated that the scribbler is a veteran of more than three score years of active service, and now claims only the rank of a medical student. "*Verbum sat sapienti.*"

ROBT. HUNTER DALTON, M.D.

Typhoid Fever.

WASHINGTON, D. C., July 2, 1894.

To the Editor:—In the report of the proceedings of the Medical Society of the District of Columbia, June 21, I am quoted as having claimed that many deaths laid at the door of typhoid fever were due to malarial fever. On the contrary, I stated that many of the deaths classed under malarial and typho-malarial fevers (especially in former years) were probably due to typhoid fever.

I did not declare that never had there been any authentic report of a case of typhoid fever resulting from well water, but I did declare that the report of the committee did not show that a single case of typhoid fever had been traced to a single well in this city.

For reasons which were given in the course of my remarks the report was characterized as sensational, contradictory and illogical; a generalization based on the barest possibilities, and fancies stated as facts.

Very respectfully,

B. G. POOL, M.D.

The Status of an Eclectic.

AUSTIN, TEXAS, July 6, 1894.

To the Editor:—If a physician be a graduate of an *Eclectic* Medical College, of the first class in standing, and said physician be, in all respects, an honorable, well-behaved practitioner of medicine, and should apply in the usual regular manner, for *membership* in a local (county) medical society of so-called *regular* physicians, *can* the physicians—members of said local society—elect said graduate from an Eclectic Medical College, a member of said local society, without violating the *Code* of the AMERICAN MEDICAL ASSOCIATION?

I am not able to find any literature giving a clear and plain answer to the foregoing question; hence, I apply to you. Please answer, as you may deem best, as to mode: either through the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION or privately. Yours truly,

Q. C. SMITH, M.D.

BOOK NOTICES.

Manual of Treatment by Active Principles. Concentrations and New Remedies. By WILLIAM F. WAUGH, A.M., M.D. Pp. 248. Cloth. Philadelphia: The Medical Press Company. 1893.

This little volume is a natural outgrowth of the earlier "Outline of Dosimetric Practice" by the same author. The first third of the work contains an alphabetical list of most of our newer remedies as well as the active principles of many drugs long in use and salts of good therapeutic repute. The remaining portion comprises a list of diseases and prominent symptoms with remedies suggested and usually a special explanation regarding each one or each group. A large number of valuable hints, tersely stated, is thus ready for convenient reference, and they merit confidence because culled from standard authorities. No one can fail to realize the advantages to be derived from the wider use of active principles and this work is to be commended as a step in that direction.

NECROLOGY.

SOLOMON R. GORGAS, M.D., died June 30, at Harrisburg Pa., of appendicitis. Laparotomy was performed in Philadelphia, and the diseased appendix was removed, but he died on the third day, from exhaustion. Dr. Gorgas was a member of the Dauphin County Medical Society, also of the State Medical Association and the AMERICAN MEDICAL ASSOCIATION. He was one of the Examiners for the Pension Fund and also Surgeon to the Pennsylvania Railroad Company. He was a graduate of the Jefferson Medical College of the class of 1874.

EZRA M. HUNT, M.D., the distinguished sanitarian and President of the New Jersey State Board of Health, died July 1.——Joseph P. Thomas, M.D., President of the Kentucky Medical Association, at Hopkinsville.——Wallace A. Sackett, M.D., of Dallas, Texas, June 28, aged 25. He was a native of New Albany, Ind., and graduated in medicine at the University of Louisville, Ky., in the class of 1893.——C. B. Ranes, M.D., of Rusk, Texas, June 28. He was born in Virginia on Jan. 17, 1808, and practiced medicine for sixty-two years. In 1835 he settled in Nacogdoches County, Texas, and lived in that county until 1849, when he removed to Dallas. He served throughout the war as regimental surgeon on the staff of Gen. Winfield Scott.——W. H. Ridenhour, M.D., of Toledo, Ohio, June 6, aged 70.——W. G. Austin, M.D., of New Orleans, June 15, aged 80. He was educated at Kenyon College, Ohio, and graduated M.D. at the Washington University of Baltimore in 1836. He began practice in Yazoo County, Miss., and after three years located at Bayou Sara, La. He was married in 1839, and shortly before the war was appointed a member of the State Board of Health. He was Superintendent of the Charity Hospital of New Orleans in 1862 when the city was taken by the Union troops, and he served in the Confederate Army until the close of the war. He was again appointed to the State Board of Health in 1877, and in 1888 was United States Examiner of Drugs. Governor Nichols appointed him quarantine physician during the presidency of Dr. C. P. Wilkinson. Dr. Austin was one of the best qualified yellow fever experts in the South.——Joseph P. Connelly, M.D., of Williamsport, Pa., died June 23, 1894, aged 35 years. He was President of the Lycoming County Medical Society at the time of his death. He was a member of the Pennsylvania State Medical Society and of the AMERICAN MEDICAL ASSOCIATION. Few men of Dr. Connelly's years have attained the position in their profession that he had. He was always active in all society work, and had the respect and esteem

of all who knew him, and his death was mourned by his professional associates.——Richard H. Isham, M.D., at Louisville, Ky., June 30, aged 62.——W. R. Smith, M.D., at Sioux City, Iowa, July 1, aged 65. He was one of the pioneers of Western Iowa, was a native of New Jersey and educated in New York city. During the war he served the Government in various capacities as examiner of recruits, physician to Indians and was one of the Pension Examining Board. He was very prominent in politics and railroad circles in the last years of his life, and was one of the Commissioners of the State of Iowa to the Paris Exposition.

SOCIETY NEWS.

The members of the Illinois State Medical Society are hereby notified that the Transactions of 1894 are now in type. The Treasurer requests that those in arrears send their checks immediately to him at Springfield.

American Electro-Therapeutic Association.—The fourth annual meeting of the American Electro-Therapeutic Association will be held in New York, September 25, 26 and 27, at the New York Academy of Medicine. Members of the medical profession are cordially invited to attend.

WILLIAM J. HERDMAN, M.D., President.
MARGARET A. CLEAVES, M.D., Secretary.

American Public Health Association. — The twenty-second annual meeting of the American Public Health Association will be held at Montreal, Canada, Sept. 25–28, 1894. The following topics have been selected for consideration at this meeting: The Pollution of Water Supplies; the Disposal of Garbage and Refuse; Animal Diseases and Animal Food; the Nomenclature of Diseases and Forms of Statistics; Protective Inoculations in Infectious Diseases; National Health Legislation; the Cause and Prevention of Diphtheria; Causes and Prevention of Infant Mortality; the Restriction and Prevention of Tuberculosis; Car Sanitation; the Prevention of the Spread of Yellow Fever. Upon all of these subjects special committees have been appointed; and all papers thereon should be presented to the appropriate committee in season to be incorporated as a part of the report of the committee, if deemed advisable. The Executive Committee announces the following additional subjects upon which papers are invited: On the Education of the Young in the Principles of Hygiene; Private Destruction of Household Garbage and Refuse; Disinfection of Dwellings after Infectious Diseases; Inspection of School Children with Reference to the Eyesight.

Indian Medical Congress.—The Indian Medical Congress will be held December 24 to 29, 1894.

The objects of the Congress are to bring together medical men from all parts of the Indian Empire, to discuss medical subjects connected with Indian diseases, and to place on permanent record some of the work which is now lost to science for want of proper publication. This Congress will afford an opportunity, never before presented, for medical men who are in isolated but important positions in the different Provinces of the Indian Empire, meeting and comparing notes with their fellow-workers in subjects of mutual interest; former friendships could be renewed, and men who might never otherwise meet would become acquainted. It is proposed that the work of the Congress should be divided into the following sections:

Medicine and Pathology; Surgery including Ophthalmology; Obstetrics, and Diseases of Women and Children; Public Health; Medico-Legal Medicine and Insanity; Pharmacology, specially Indigenous Drugs.

Although the Congress is primarily an Indian one, invitations have been sent to medical men in other countries, some of whom have already accepted, and it is believed that many more will come.

A special committee has been formed to arrange for the accommodation of visitors and to provide for their comfort. The local secretaries of this Committee are: Surg-Captain H. W. Pilgrim, General Hospital, Calcutta; Dr. Prandhan Bose, M. B., Calcutta Medical School, Calcutta, to whom, or to the honorary central secretaries, applications should be made for rooms. The price of accommodation in Calcutta may be taken from rs. 7 to rs. 14 a day for Europeans, and rs. 3 to rs. 5 for Indians. Tickets of membership may be obtained from either the honorary central secretaries in Calcutta, or from the local secretaries in the different parts of the Indian Empire. An entertainment and reception committee will arrange for visits to places of interest in Calcutta and neighborhood.

Members are requested to notify to the central secretaries, or to the local secretaries of their districts, their intention to read papers and the titles of the same, which should reach the central secretaries not later than Oct. 15, 1894.

The cost of members tickets is rs. 10. Members will be entitled to a copy of the Transactions on payment of an additional rs. 10. Non-members may obtain the Transactions of the Congress on payment of rs. 25. Orders for a copy of the Transactions should be registered early.

A guarantee fund has been started, and all cheques should be sent to the honorary treasurers, Dr. Mohendra Nath Gupta, and Dr. Bolye Chunder Sen, Campbell Medical School, Calcutta.

American Academy of Medicine.—The nineteenth annual meeting of the American Academy of Medicine will be held at the "Waumbek," Jefferson, N. H., on Wednesday and Thursday, August 29 and 30, 1894. The greater part of the time is to be devoted to the discussion of certain problems relating to the Medico-Social Relations of the Medical Profession to the "Dependent Classes." The following papers may be expected:

"The Retrogressives: What Produces Them; Classification." Bayard Holmes, Chicago, Ill.

"Importance of the Study of the Subject to the Profession." Charles McIntire, Easton, Pa.

"The Provident Dispensary in England." H. Webster Jones, London, England.

Title to be announced. J. A. Spalding, Portland, Me.

"Assistance and Care for the Blind." Charles A. Oliver, Philadelphia.

"Prevention of Blindness." Benjamin Lee, Philadelphia.

"Present Status of Legislation for the Prevention of Blindness from Infantile Ophthalmia." Lucien Howe, Buffalo.

"Senile Dementia and Testamentary Capacity." J. N. Whittaker, Cincinnati.

Title to be announced. Gershom H. Hill, Independence, Iowa.

"What Agencies Conspire to Check Development in the Minds of Children?" J. Madison Taylor, Philadelphia.

"The Medical Service of the U. S. Pension Bureau." P. S. Conner, Cincinnati.

"Physical Training for Delinquents." Helen C. Putnam Providence, R. I.

"Government Commission instead of State License." J .D. Kelly, New Haven, Conn.

"The Relation of Food Adulterations to the Dependent Classes." Henry Leffmann, Philadelphia.

Title to be announced. G. M. Gould, Philadelphia. President's Address.

Title to be announced. F. H. Gerrish, Portland, Me.

Several additional papers have been provisionally promised; if they can be read they will appear in the completed program. Arrangements have been made for a special excursion from New York and Boston and return at reduced rates. A choice is offered of an eleven days excursion, including most of the expenses, or of returning immediately at the close of the meeting, and is open to any one desirous of attending the meeting, whether members of the Academy or not. Any additional information about the meeting or the excursion may be obtained from

CHARLES MCINTIRE, Sec'y, Easton, Pa.

PUBLIC HEALTH.

Boston Board of Health.—The City Board of Health of Boston reprints and indorses the recommendations of the Massachusetts State Board of Health concerning tuberculosis and earnestly recommends their enforcement by the physicians and inhabitants of the city.

The Cholera.—Asiatic cholera is reported to be spreading in Russia with a decided increase in the number of cases and in fatality in St. Petersburg. Elsewhere on the Continent the disease attracts little general attention although sanitary authorities are exceedingly vigilant. On the 6th inst. four more cases of the disease developed among the passengers on an infected steamer recently arrived from St. Petersburg at Stockholm, and nineteen passengers had been removed to quarantine from another steamer just arrived from the same port.

The Plague.—Writing from Peking, June 20, Mr. Frank G. Carpenter gives the first coherent account of the origin and spread of the bubonic plague in China. Previous reports have attributed its spread from Hong Kong to Canton, at which latter place it was said to have made its appearance about the end of April. Mr. Carpenter asserts that the disease came originally from the interior and reached Canton during the last week of February where it speedily caused an average of 200 deaths a day. "This average steadily increased until in March and April it was 500 a day and the mortality at the present time (June 20) is very large." The disease made its appearance in Hong Kong in April, carried thither presumably by the fleeing Cantonese.

Washington Sewage Disposal.—Mr. Richardson's (Tenn.) bill to provide for the sewage disposal of the District of Columbia was discussed at a recent meeting of the Washington Board of Trade and, together with the report of the District Medical Society on typhoid fever, was unanimously indorsed and the action ordered to be reported to Congress. The bill provides for a total expenditure of $7,500,000, of which sum $1,000,000 is for the extension of the system of trunk sewers, $3,350,000 for the completion of the system of sewage disposal and protection against floods, and the remaining $3,150,000 for the improvement of streets, roads, avenues and reservations.

Hygiene in Medical Education.—At a recent conjoint session of the North Carolina State Board of Health and State Medical Society it was unanimously resolved to request medical colleges to give not less than two lectures a week on the subject of hygiene, and the Board of Medical Examiners was requested to require of applicants for license the same preparation on this as on other branches of medicine specified in the Medical Practice Act. The Secretary of the Board, Dr. R. H. Lewis, says that, while similar action has been taken by the Ohio and other State Boards of Health: "So far as we know, this is the first instance in which the organized medical profession of a State has joined in such action. It is significant of the progressive spirit that animates the profession of North Carolina."

"Scare-Head" Journalism.—The temptation to sensationalizing in matters affecting the public health, is so generally yielded to by the average newspaper that the JOURNAL hastens to recognize the value of such an exceptionally level-headed editorial as that in a recent issue of the Washington *Post* under the caption, "Beware of Scare-Heads," in which it advises its readers not to be alarmed because of the plague in China, or the cholera in Europe, or the yellow fever in Cuba. It summarizes the situation substantially as it has been given in this department from time to time and says, as to cholera: "The interests of the United States in this matter were never so vigilantly represented abroad as they are now and our Eastern seaboard was never so well fortified against the introduction of cholera from Europe." As to the plague in China: "It is gratifying to know that all along the Western coast, from British Columbia down, the authorities both of the Dominion and of the United States have taken every precaution that medical skill could suggest to prevent the introduction of plague germs by shipboard." And, finally: "The symptoms of an epidemic visitation of any sort from any country are too slight to warrant anxiety, still less anything like a panicky sensation. They are just enough pronounced to remind the sanitary authorities all along the line that they have their duty to perform, which admits of no relaxation, and this, we entertain no doubt, they fully realize. The people have also a duty to discharge on their own account in exercising all possible precautions as to their own immediate conditions and the importance of carefully regulating their habits of life and maintaining the cleanliness of their surroundings." Such timely advice, so intelligently given, is in sharp contrast to the startling head-lines, sensational exaggerations, denunciation of quarantine regulations and vilification of sanitary authorities which would follow the advent of the first case of Asiatic cholera or bubonic plague upon our shores.

Sanitary Legislation Urged.—The Louisiana State Board of Health, acting in conjunction with a board of medical experts, has memorialized the Legislature of that State for the enactment of two bills—one providing for the inspection of dairies, milk and milk products, the other for the thorough inspection of meat offered for human food in the State of Louisiana. After reciting some of the general considerations for the enactment of such measures, the memorialists say: To be brief, we will limit ourselves to the consideration of that most fatal of all diseases, that scourge of humanity, tuberculosis, better known as consumption. This disease causes more deaths than all the epidemic diseases combined. Statistics show that one-sixth of all deaths throughout the civilized world are caused by consumption. It is estimated that there are never less than two hundred existing cases in New Orleans. During the fourteen years, 1880 to 1893 inclusive, there were over twelve thousand deaths from that cause alone. It prevails the whole year round, in every country and climate, respects neither age, sex, social condition nor race, and affects every species of animals. Consumption is now recognized by the medical world to be a germ disease, caused by a special microorganism, and communicable from man to man, and likewise from the lower animals to man. Perhaps the most frequent and least suspected cause of this infectious and fatal disease is due to the use of meat and milk from animals affected with consumption, to which disease the bovine race is the most liable. We should here notice that those animals which furnish us with our daily food, the cow, the hog and the fowl are precisely the most subject to consumption. Out of 1,058 cattle examined in Germany by Kapp, 738 were found to be consumptive. Among the animals slaughtered at the abattoirs of Berlin during the years 1887 and 1888, 4,300 were consumptive. In the United States the proportion of consumptive cows is from 10 to 15 per cent; in particular parts of the country much higher. In our city there are seven thousand cows in round numbers, and at the lowest calculation three hundred and fifty of these are poisoning our milk supply." The memorial concludes with this note of warning to the Legislature: "The Board of Health of the State of Louisiana, conjointly with the Board of Medical Experts, with due respect to your wisdom and patriotism, being aware of and appreciating its responsibility toward the people of the State, in thus asking and praying for proper legislation in securing a sound meat and milk supply, feels and emphatically so states, that in presenting the foregoing considerations it has done its whole duty in the premises, leaving the responsibility for the passage or failure of the proposed measures to the legislators."

MISCELLANY.

Change of Address.—Dr. J. M. Anders has removed to 1603 Walnut Street, Philadelphia.

Expert Witnesses Need Not be the Best of their Class.—It is not required, the Supreme Court of South Dakota holds, in the case of Gleckler v. Slavens, decided May 28, 1894, that an expert witness stand at the head of his class to make his evidence admissible. The jury, it says, will determine the value of his opinion from the knowledge which he shows himself to possess.

Tennessee Medical Examining Board.—Dr. J. B. Murfree, of Murfreesboro, has resigned as President of the Tennessee State Board of Medical Examiners, on account of his connection with the Medical Department of the University of the South, at Sewanee, Tenn., as Professor of Surgery in that institution. Dr. Heber Jones, of Memphis, has been elected to succeed him as President, and Dr. Robert Pillow, of Columbia, has been appointed to fill the vacancy.

Pennsylvania State Medical Examiners.—The following named gentlemen comprise the Board of Medical Examiners, representing the Medical Society of the State of Pennsylvania: Dr. H. G. McCormick, President, Williamsport; Dr. W. S. Foster, Secretary, 133 Wyllie Avenue, Pittsburg; Dr. A. H. Hulshizer, Philadelphia; Dr. W. J. K. Kline, Greensburg; Dr. Henry Bates, Jr., Philadelphia; Dr. J. E. Silliman, Erie; Dr. S. W. Latta, Philadelphia.

A Bicycle Ambulance.—Dr. H. L. Getz, of Marshalltown Iowa, has invented an ambulance attachment to a "safety" bicycle. It consists in a stretcher, the frame of which is made of aluminum, and covered with canvas. When not in use it is rolled up. When the cycler wishes to transport a wounded person, he simply unrolls the stretcher, attaches it and puts the patient on it, and pushes it along as any other wheeled stretcher.

Poison—Beware!—A Yankee shoedealer has applied for a patent on a poison bottle, made of blue glass and molded in the form of a skull and cross-bones. The word "poison" is placed in raised letters on the forehead, and at the base of the skull a space is left for the red label that tells the nature of the drug. The thoughtful newspapers tell us that "the hollow eye-sockets, the jaw-bones, and the teeth would tell its purpose to a blind man and, ghastly as it may seem to those who are blessed with sight, it is better to be frightened than to die."

Jenner's Antecessor.—His name is not known; but as Jenner's centennial approaches it was to be expected that some one would discover that somebody else had discovered vaccination long before Hunter's pupil inoculated James Phipps with the cowpox in 1796. At a recent meeting of the Epidemiological Society of London, Dr. Pringle called attention to the following passage in an ancient Hindu work as evidence that vaccination was practiced in India centuries before the birth of Edward Jenner: "The smallpox produced from the udder of the cow will be of the same mild nature as the original disease; the pock shall be of good color, filled with clear liquid, and surrounded by a circle of red. There will be slight fever for one, two or three days, and no fear need afterward be entertained of smallpox so long as life endures."

Royal Arcanum Mortality.—Among the 143,192 selected lives which constitute the membership of the Royal Arcanum, the death rate in 1893, as reported by the Examiner-in-chief, was 9.11 per thousand. The largest per cent. of the total mortality was from affections of the brain and spine—16.2 per cent., and the smallest classified, from carcinoma—4.1 per cent. The following are the percentages of the total mortality from the causes named: Tuberculosis, 14.9; diseases of the heart and arteries, 11.9; diseases of the lungs, excluding tuberculosis, 11.8; diseases of the digestive organs, 10.2; diseases of the kidneys, 9.6; casualties, 6.5; suicides, 4.6. The zymotic diseases—typhoid fever most frequent—caused 8.6 per cent. of the total. The death rates from tuberculosis, in States having a membership of over 1,000 were as follows: Massachusetts, 2.1; Illinois, 1.8; Ohio, 1.8; New Jersey, 1.7; Georgia, 1.6; Tennessee, 1.5; New York, 1.5; Michigan, 1.3; Indiana, 1.3; Virginia, 1.2; Wisconsin, 1.1; Missouri, 0.9; Pennsylvania, 0.8; North Carolina, 0.7; Connecticut, 0.7; Ontario, 0.3.

Liability of the Husband Who Abandons an Insane Wife.—The husband who turns his wife out of doors, or so maltreats her as to compel her to leave his domicile, gives her, in effect, a letter of credit for whatever her preservation or safety requires. If this is so in ordinary cases, says the United States Circuit Court of Appeals in the case of Davis v. St. Vincent's Institution for the Insane, decided April 2, 1894, how much more strongly does the reason of the law apply to the case of the unfortunate wife who is rendered by insanity not only incapable of providing for herself, but incapable of making any sort of a request or any sort of a contract. Here the charitable institution that gave shelter and protection to an abandoned insane wife, and ministered to her needs, knew that it could not look to her for compensation, and knew that she was legally incompetent to make any contract of any nature. Necessarily it looked, and the court holds that, under such circumstances, it had the legal right to look to the person who was legally responsible for the necessaries furnished her, namely, her husband.

Rules as to the Proof of Insanity.—The Supreme Court of Georgia says, in the case of State v. Coley decided May 21, 1894, that it is a general rule that no witnesses other than such as are declared by the court, upon examination, to be experts shall be allowed in the face of objection, to express their opinion upon matters to which the inquiry of a jury is being directed. One of the exceptions to this rule is that any person who has sufficient intelligence to testify as to any subject is allowed to express an opinion upon a question of the sanity of another person, to be weighed by the jury according to their estimate of its value. But while testimony as to mental capacity falls within the exception to the rule governing the admissibility of proof of opinions, there is no principle upon which hearsay evidence of what experts or non-experts have thought or said of the sanity or insanity of a particular person can be made competent. An attempt to prove insanity by general reputation is not less objectionable and incompetent than would be an attempt to show by a third party what a particular individual thought or said.

Washington Notes.

DR. J. T. JOHNSON, May 23, in medical society, reported his successful removal of a forty pound tumor of male kidney. Operation performed May 11; patient in excellent condition since.

IN THE competitive examination for Resident and Assistant Resident Physician for the Emergency Hospital, Dr. James R. Church secured the former, and Dr. Robert M. Smith the latter position. Ten applicants took the examination. The University of Virginia, the University of Pennsylvania, the Georgetown and Columbian Universities furnished the applicants.

DR. A. F. A. KING has resigned the office of Dean of the Medical Department of the Columbian University, and has been honored by the title of Dean Emeritus. Dr. King began his services in the school in 1866, lecturing on toxicology and new remedies, afterwards assisting the late Dr. Wm. P.

Johnston in obstetrics, and in 1879, upon the death of Dr. John C. Riley, was elected Dean of the Faculty and Professor of obstetrics and diseases of women and children, which position he has held for the past fifteen years. He has been a frequent contributor to medical literature and is the author of "King's Manual of Obstetrics." The office formerly held by Dr. King has been divided among three members of the Faculty, viz: Dr. D. K. Shute, Dean, Medical School; Dr. J. Hall Lewis, D.D.S., Dean, Dental School; and Dr. Emil A. de Schweinitz, Secretary-Treasurer.

Philadelphia Notes.

PROF. ERNEST LAPLACE has been elected an additional member of the State Quarantine Committee of Pennsylvania. Dr. Benjamin Lee was reëlected Secretary for the ensuing term.

THE BOARD OF HEALTH reported thirteen deaths from sunstroke, and a largely increased mortality among infants and old people especially, in this city, during the last week of June. This is an index of the condition of the weather, technically termed a torrid wave, which is accompanied by a high degree of humidity, causing sultriness even with the thermometer below 90 degrees F. There was also an increase in the deaths from contagious diseases, such as diphtheria, scarlatina and typhoid. There are no cases of smallpox at present in the city.

Medical College Notes.

AT THE MEDICO-CHIRURGICAL COLLEGE of Philadelphia, the following appointments have been made by the Trustees: A. E. Kenelly, Professor of Electro-therapeutics; Edwin J. Houston, Professor of Physics; Dr. P. S. Donellan, Lecturer on Clinical Medicine; Dr. H. S. Andus, Lecturer on Physical Diagnosis.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the annual meeting of the Association of Fellows of the Royal College of Surgeons, Eng., held in London, June 19, the following officers were elected for the ensuing year: President, George Pollock; Vice-Presidents, O. T. Holmes, W. Rivington; Auditor, A. T. Morton; Honorary Secretary, H. Percy Dunn.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—The faculty of the St. Louis College of Physicians and Surgeons has been re-organized as follows: James A. Close, M. B., L. R. C. P., and M. R. C. S., Eng., Dean, Professor of the Principles and Practice of Medicine and Clinical Medicine, and Director of the Biological Laboratory; Emory Lanphear, M.D., Ph.D., Operative and Clinical Surgery; Andrew A. Henske, A. M., M.D., Gynecology and Obstetrics; Frank Parsons Norbury, A.M., M.D., Neurology; G. Wiley Broome, M.D., Principles and Practice of Surgery; John H. Duncan, A.M., M.D., Dermatology; George D. Purinton, A.M., M.D., Ph.D., Physiology and Clinical Medicine; Henry Dettmer, A.M., Ph.D., Chemistry and Director of the Chemical Laboratory; James Moores Ball, M.D., Ophthalmology and Otology; William W. Graves, M.D., Materia Medica and Diseases of Children; M. Dwight Jennings, M.D., Rhinology, Laryngology and Bacteriology; Frank Ring, M.D., Professor of Anatomy, is at present in Germany, visiting the different Universities in the interest of this branch. Anatomy will be taught by H. Landis Getz, M.D., of Marshalltown, Iowa. Thomas J. Portis, L.L.D, is Professor of Medical Jurisprudence. Robert Funkhouser, A.M., M.D., L.L. B., has accepted the chair of Gynecology and Abdominal Surgery.

Hospital Notes.

ST. JOHN'S RIVERSIDE HOSPITAL.—The new buildings erected for St. John's Riverside Hospital, at Yonkers, N. Y., by Mr. and Mrs. William F. Cochran, were formally presented to the hospital association, June 28.

CHARITY HOSPITAL, NEW ORLEANS.—At a meeting of the Board of Administrators held July 2, an addition was proposed, on account of the overcrowded condition of the hospital. A bequest of $22,000 was acknowledged from Thommy Lafon, of New Orleans. It is expected that the new building will be completed by October 1.

HOSPITAL AT FORT DODGE, IOWA.—A hospital was dedicated at Fort Dodge, Iowa, June 29. The following are the incorporators: J. M. Mulroney, Thos. H. Wright, J. F. Duncombe, Dr. J. W. Kime, Dr. H. G. Ristine, Dr. C. H. Churchill and Frank Gates. The officers are L. S. Coffin, President; C. C. Carpenter, Vice-President; Frank Gates, Treasurer; Dr. J. W. Kime, Secretary.

THE UNIVERSITY OF PENNSYLVANIA has broken ground for important additions to the Hospital. At Thirty-sixth and Spruce Streets will be erected a three story building for a chemical laboratory; and a large addition for the Maternity Hospital has been commenced, which will give fifty new beds, with dormitories for nurses.

MERCY HOSPITAL.—Articles of incorporation of Mercy Hospital, Davenport, Iowa, have been filed with the county recorder. The incorporators are Anne McLaughlin, President; Catherine Martin, Vice-President; Mary Flaherty, Treasurer; Mary Delany, Secretary; and Catherine Murphy, who with the officers completes the board of five directors.

IOWA HOSPITALS FOR INSANE.—The reports of the superintendents of the Iowa hospitals for the insane for the month of May give the following statistics: Admitted in May, 75; discharged, 68; died, 14; remaining at the end of the month at Mt. Pleasant, males, 437; females, 414; at Independence, males, 359; females, 375; at Clarinda, males, 335, females, 235. Remaining in all hospitals, males, 1,231; females, 1,024.

SURGICAL HOSPITAL AT NEWPORT.—MRS. Frederick W. Vanderbilt has given the Newport Hospital, funds for the erection of a surgical hospital, which is to be called the Vanderbilt Surgical Building. A Boston architect has prepared plans which a committee is now considering. The structure will be of one story 52x36, and of brick and stone. Orders were to have it equipped equal to any building of its kind in this country. It will be built at once on the grounds adjoining the present hospital building.—*Boston Transcript.*

THE PUBLIC SERVICE.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from June 30, 1894, to July 6, 1894.

Major AUGUSTUS A. DE LOFFRE, Surgeon U. S. A. (Ft. Logan, Col.), is granted three months' leave of absence, with permission to go beyond sea.

Col. BERNARD J. D. IRWIN, Asst. Surgeon-General, retirement from active service June 28, 1894, is announced. By direction of the President.

Capt. GEORGE MCCREERY, Asst. Surgeon, will be relieved from duty at Ft. D. A. Russell, Wyo., by the commanding officer of that post, and will report for duty at Ft. Washakie, Wyo.

First Lieut FRANK E. MERIWETHER, Asst. Surgeon, will be relieved from duty at Ft. Logan, Col., by the commanding officer of that post, and will report for duty at San Diego Bks., Cal.

Capt. LOUIS S. TESSON, Asst. Surgeon, is relieved from duty at Jefferson Bks., Mo., upon the arrival of Capt. CHARLES B. EWING, Asst. Surgeon, and ordered to duty as attending surgeon and examiner of recruits, Chicago, Ill., relieving Capt. DANIEL M. APPEL, Asst. Surgeon. Capt. APPEL, on being thus relieved, ordered to Ft. Porter, N. Y., for duty, relieving Major CURTIS L. PRICE, Surgeon. Major PRICE, on being thus relieved, is ordered to Ft. Custer, Mont., for duty, relieving Capt. PETER R. EGAN, Asst. Surgeon.

LETTERS RECEIVED.

(A) Armitage, J. E., (2) National Home, Wis; Allen, G. M., Cincinnati, Ohio; Anderson, B. J., Burlington, Vt.

(B) Brainard, B. F., Kansas City, Mo.

(C) Chambers, J. H. & Co., St. Louis, Mo.; Cleary, W. P., New York, N. Y.; Colburn J. Elliott, Chicago, Ill.; Columbia Chemical Co., Washington, D. C.; Currier, C. G., New York, N. Y.; Carvelle, H. D. W., Manchester, N. H.; Cook, Geo. F., Oxford, Ohio.

(E) Ellis, P. V., Marshalltown, Iowa; Eskridge, J. T., Denver, Col.

(F) Fee, Chas. S., St. Paul, Minn.; Franklin, G. A., Chillicothe, Ohio; Fringer, W. R., Rockford, Ill.

(G) Gillman, R. W., Detroit, Mich.

(H) Hitchcock, C. W., Detroit, Mich.; Haven, O. D., Youngstown, Ohio; Hagler, E. E., Springfield, Ill.; Hayward, J. C., Marshfield, Wis.

(J) Johnson, H. L. E., Washington, D. C.; Jenckes, H. L., Galena, Ill.

(K) Keunpker, J. F., (2) West Burlington, Iowa; Kolloch, C. W., Charleston, S. C.

(L) Listol Chemical Co., St. Louis, Mo.; Leland, Lena C., Rockford, Ill.; Lambert Pharmacal Co., St. Louis, Mo.; Lewis, W. E., Cincinnati, Ohio.

(M) Millard, Perry H., St. Paul, Minn.; Murphy, Edward, New Harmony, Ind.; Michael, J. Edwin, Baltimore, Md.; McCarroll, W., Pontiac, Mich.; Miller, H. R., Oakland, Neb.

(P) Perpoena Chemical Co., New York, N. Y.; Park, J. Walter, Harrisburg, Pa.; Palmer, Edgar, La Crosse, Wis.; Potter, W. W., Buffalo, N. Y.

(R) Rankin, A. C., Pullman, Ill.; Rio Chemical Co., St. Louis, Mo.

(S) Streett, David, Baltimore, Md.; Scribner's Chas. Son's, New York, N. Y.; Smith, Frank Trester, Chattanooga, Tenn.

(T) Topliff, C. L., New York, N. Y.; Totman, D. M., Syracuse, N. Y.; Taylor, Lewis H., Wilkesbarre, Pa.

(V) Vincent, D., (2) La Porte, Ind.

(W) Wyman, Hal C., Detroit, Mich.; Wheaton, C. A., St. Paul, Minn.; Warner, W. R. & Co., Philadelphia, Pa.; White, J. A., Richmond, Va.; West Baden Springs Co., West Baden, Ind.